Refrigerant R407C

AIRSTAGE™

S SERIES

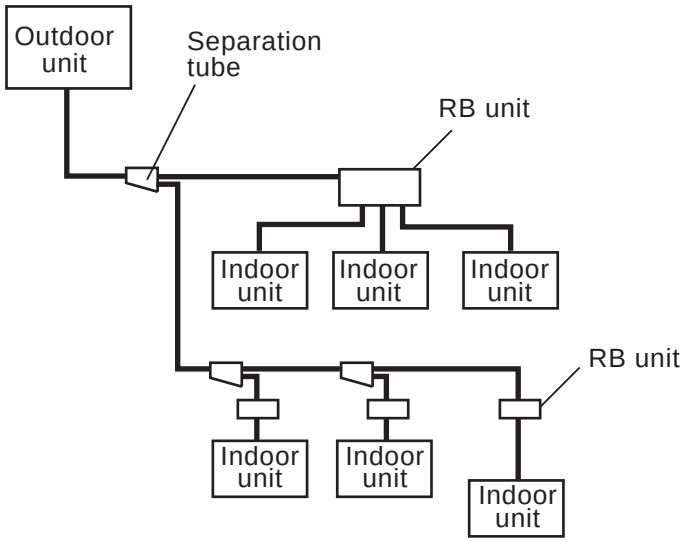
5 . INSTALLATION

5-1 PIPING DESIGN

5-1-1 PIPING METHOD

■ SUMMARY OF PIPING SYSTEM

● Heat Recovery Type



✳ Separation of piping :
Separation tube system and header system

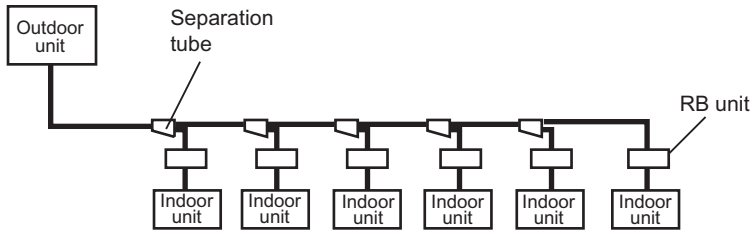
✳ Number of piping :
3 each of outdoor unit - RB unit,2 pipe for indoor unit

✳ RB unit :
Individual branching and 4 unit branching

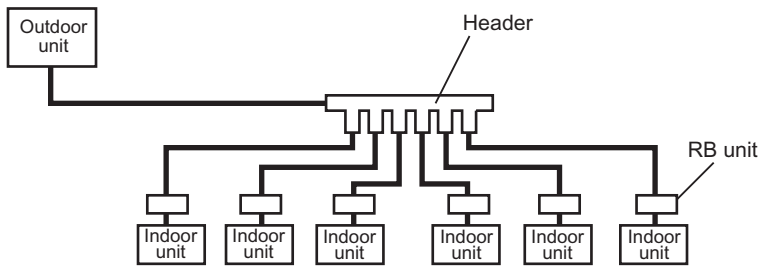
INSTALLATION

■TYPE OF PIPING SYSTEM

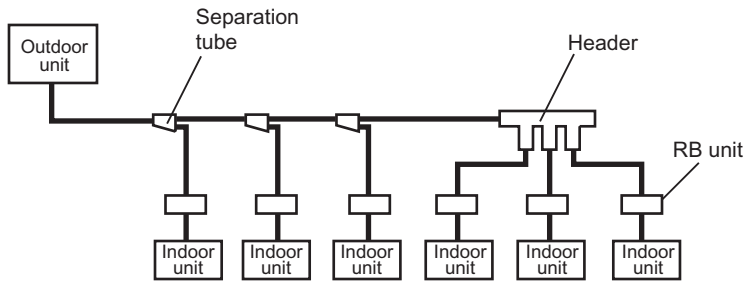
●Line Piping System

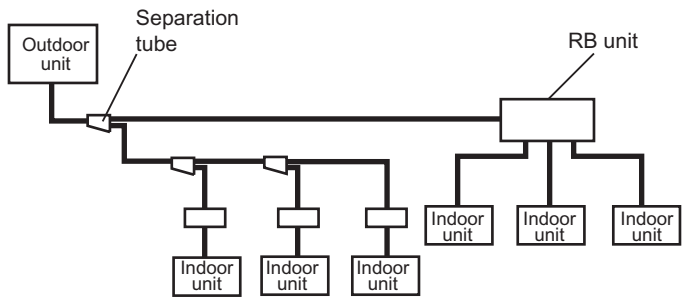


●Header Piping System



●Combined (Separation tube/Header) Piping System



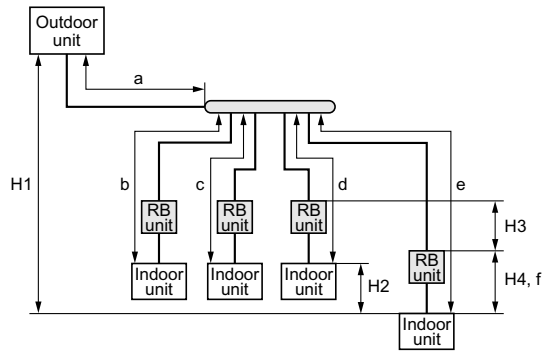


Separation after header separation is not possible

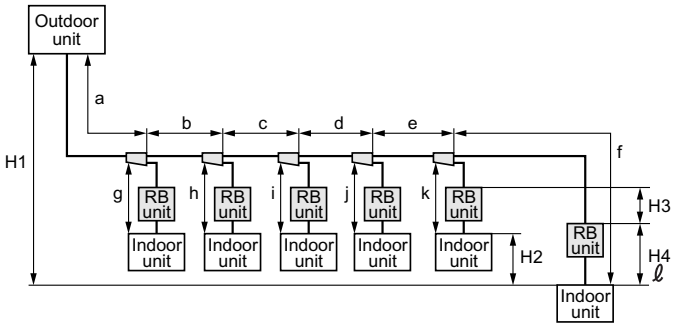
INSTALLATION

5-1-2. LIMITATIONS

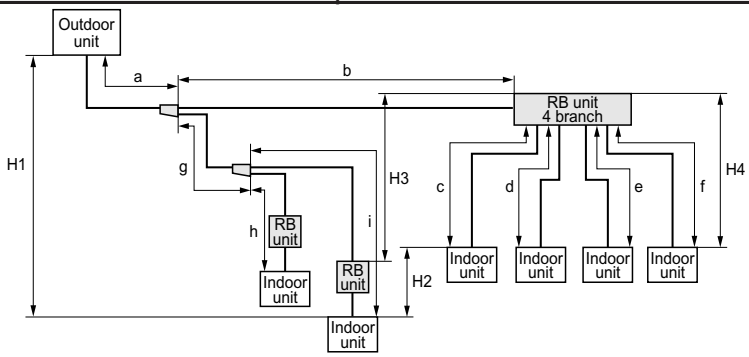
EXAMPLE 1
Branch kit : Header



EXAMPLE 2
Branch kit : Separation tube



EXAMPLE 3
Branch kit : Separation tube + Header



CAUTIONS

- Keep the length of straight portion of pipe between two branch kits longer than 0.5m.
- Don't use separation tube in the downstream of header.
- Install separation tube and header in the corrent direction specified in installation.

Maximum allowable length (actual pipe length)		EXAMPLE 1	EXAMPLE 2	EXAMPLE 3
Between outdoor unit and the farthest indoor unit	100 m	a + b	a + g	a + g + h
		a + c	a + b + h	a + g + i
		a + d	a + b + c + i	a + b + c
		a + e	a + b + c + d + j	a + b + d
		-	a + b + c + d + e + k	a + b + e
		-	a + b + c + d + e + f	a + b + f
Total pipe length	200 m	a + b + c + d + e	a + b + c + d + e + f + g + h + i + j + k	a + b + c + d + e + f + g + h + i
Between outdoor unit and the 1st branch kit	70 m	a		
Between the 1st branch kit and the farthest indoor unit	40 m	b	g	g + h
		c	b + h	g + i
		d	b + c + i	b + c
		e	b + c + d + j	b + d
		-	b + c + d + e + k	b + e
		-	b + c + d + e + f	b + f
Between indoor unit and RB unit	40 m	f	ℓ	c, d, e, f

Maximum allowable height difference		EXAMPLE 1	EXAMPLE 2	EXAMPLE 3
Between outdoor unit and indoor units	50 m	H1 (If outdoor unit is in the upper side)		
	40 m	H1 (If outdoor unit is in the lower side)		
Between indoor units	15 m	H2		
Between RB units	15 m	H3		
Between RB unit and indoor unit	5 m	H4		

INSTALLATION

5-1-3. PIPE SIZE

■ HEAT RECOVERY MODEL

● Pipe size connected to outdoor unit.

(unit : mm)

Model	Suction Gas Pipe size	Discharge Gas Pipe size	Liquid Pipe size
AO 90	ϕ 28.58	ϕ 19.05	ϕ 12.70

● Between two adjacent refrigerant branch kits.

(unit : mm)

Total model code of indoor unit	Suction Gas Pipe size	Discharge Gas Pipe size	Liquid Pipe size	Separation Kit
Less than 30	ϕ 15.88	ϕ 12.70	ϕ 9.52	UTR-BP54MA
31 or more to 60	ϕ 19.05	ϕ 15.88	ϕ 9.52	
61 or more	ϕ 28.58	ϕ 19.05	ϕ 12.70	UTR-BP90MA

✻ "Total model code of indoor unit" is the total value for the indoor unit model code connected downstream.

● Connection pipe size of indoor unit.

(unit : mm)

Model code of indoor unit	Gas Pipe size	Liquid Pipe size
7, 9	ϕ 9.52	ϕ 6.35
12, 14	ϕ 12.70	ϕ 6.35
18, 20, 24, 25	ϕ 15.88	ϕ 6.35
30	ϕ 15.88	ϕ 9.52
36, 45, 54, 60	ϕ 19.05	ϕ 9.52

∗ A part of V series indoor units are required adaptor for connecting pipes.

■ PIPE DIAMETER, RECOMMENDED MATERIAL AND WALL THICKNESS

Nominal Diameter	(in)	1/4"	3/8"	1/2"	5/8"	3/4"	1-1/8"
Outside Diameter	(mm)	6.35	9.52	12.70	15.88	19.05	28.58
Material		COPPER JIS H3300 C1220T-O or equivalent					
Wall Thickness	(mm)	0.8	0.8	0.8	1.0	1.0	1.2

Design pressure : 2.94MPa G.
Please select the pipe size in accordance with local rules.

INSTALLATION

5-1-4. SELECTION OF PIPE HEAT INSULATING MATERIAL

1. Always insulate the refrigerant pipe to prevent condensation and water droplets by the refrigerant pipe.

2. Decide the thickness of the heat insulating material by referring to the recommended minimum thickness in Table 1.
   (For installation condition T=32 °C(DB),humidity≦70%, humidity≦75%, humidity≦80%, humidity≦85%)

3. When the outdoor unit is installed at a higher position than the indoor unit, fill the connecting part gap with putty, etc. to prevent the dew condensation water of the valve of the outdoor unit from flowing to the indoors from the gap between the pipe and the heat insulating material.

4. Liquid pipe and gas pipe should be completely insulated with same specification and sealed.

5. In case not to insulate and not to seal refrigerant pipe completely, it will become the cause of water leak.

Table 1 Size of refrigerant pipe and recommended minimum thickness of heat insulating material
(In case a heat insulating material which thermal conductivity is equal to or less than 0.040 W/(m·k) is used.)

		Recommended minimum thickness for heat insulating material (mm)			
Relative humidity		≦ 70%	≦ 75%	≦ 80%	≦ 85%
Refrigerant pipe Outside diameter mm(in)	6.35 (1/4")	8	10	13	17
	9.52 (3/8")	9	11	14	18
	12.70 (1/2")	10	12	15	19
	15.88 (5/8")	10	12	16	20
	19.05 (3/4")	10	13	16	21
	28.58 (1 1/8")	11	14	18	23

※ When an ambient temperature and relative humidity exceed 32 °C (DB)and≧85%, respectively please strengthen heat insulation of refrigerant pipe. When not strengthening heat insulation of refrigerant pipe, the surface of the heat insulation may be dewed.

※ Since gas pipe becomes high temperature at heating operation,
for heatpump type, please select the heat insulating material which heat-resistant temperature is 120 °C or more.

INSTALLATION

5-1-5. ADDITIONAL CHARGE CALCULATION

- Additional refrigerant charge amount is calculated according to calculated value from its pipe length of liquid pipe and additional amount for outdoor unit.
- Round up the calculated result to two decimal places.

■ CALCULATION OF ADDITIONAL REFRIGERANT CHARGE AMOUNT

Model	Factory charged amount (kg)	A Additional amount for outdoor unit (kg)
AO∗90MPCMF	11.8	1.2

Diameter of liquid pipe (mm)	B Additional amount for pipe length (kg/m)
6.35	0.025
9.52	0.063
12.70	0.136

● Additional amount for outdoor unit

A = 1.2 (kg)

● Calculation of additional amount for pipe length

B =	Total length of Ø12.70mm liquid pipe	x 0.136 kg/m	**+**	Total length of Ø9.52mm liquid pipe	x 0.063 kg/m	**+**	Total length of Ø6.35mm liquid pipe	x 0.025 kg/m			
	m			m			m				
	kg			kg			kg				

● Calculation of additional refrigerant charge amount

C = A + B

Example : When the liquid pipe length are 20m (Ø12.70mm), 15m (Ø9.52mm), and 20m (Ø6.35mm), respectively.

Additional amount for outdoor unit :
A = 1.2 kg

Calculation of additional amount for pipe length :
B = 20(m) x 0.136(kg/m) +15(m) x 0.063(kg/m) + 20(m) x 0.025(kg/m) = 4.17(kg)

Calculation of additional refrigerant charge amount :

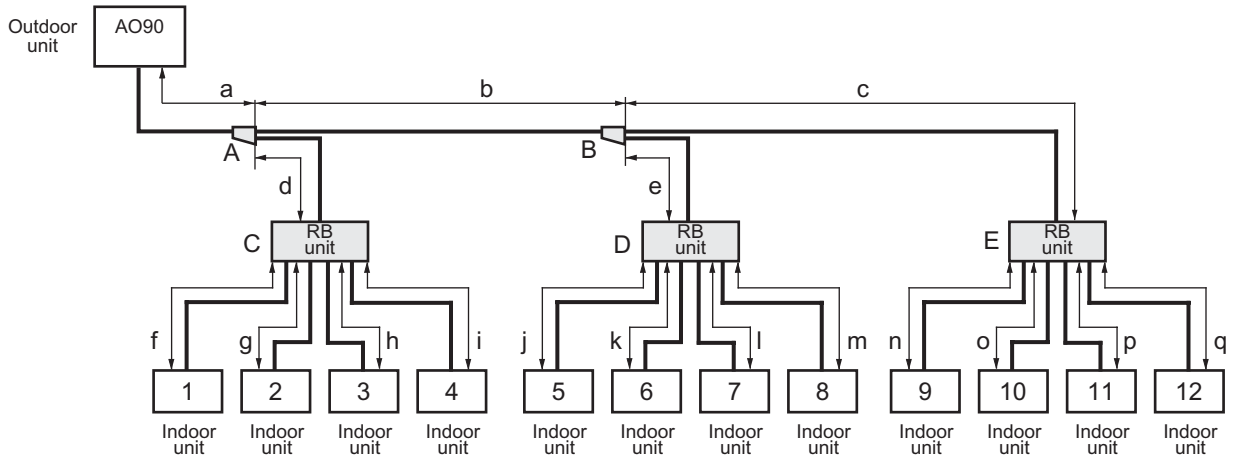
1.2 kg + 4.17 kg = 5.37 kg

INSTALLATION

5-1-6. EXAMPLE OF PIPING DESIGN

■HEAT RECOVERY MODEL

(1) Refrigerant system ①



- **System configuration**

	1	2	3	4	5	6	7	8	9	10
Example 1	AU9	AU9	AU9	AU9	AU7	AU7	AU7	AU7	AU7	AU7
Capacity(kW)	2.8	2.8	2.8	2.8	2.2	2.2	2.2	2.2	2.2	2.2
Example 2	AU9	AU9	AU9	AU9	AU7	AU7	AU7	AU7	AU7	AU7
Capacity(kW)	2.8	2.8	2.8	2.8	2.2	2.2	2.2	2.2	2.2	2.2

11	12	Total capacity
AU9	AU9	
2.8	2.8	30.0
AU25	AU25	
7.05	7.05	38.5

Total indoor unit capacity (1 refrigerant system)
Example1 : Total capacity = 30.0 ≦ 36.4
Example2 : Total capacity = 38.5 > 36.4 ※Example 2 cannot be selected

- **Selection of pipe size (Example 1)**

(unit : mm)

	a	b	c	d	e	f	g
Suction Gas Pipe	ϕ28.58	ϕ19.05	ϕ19.05	ϕ19.05	ϕ15.88	——	——
Discharge Gas Pipe	ϕ19.05	ϕ15.88	ϕ15.88	ϕ15.88	ϕ12.70	——	——
Gas Pipe	——	——	——	——	——	ϕ 9.52	ϕ 9.52
Liquid Pipe	ϕ12.70	ϕ 9.52	ϕ 9.52	ϕ 9.52	ϕ 9.52	ϕ 6.35	ϕ 6.35
Length [m] (Example)	10	10	15	5	5	10	5

h	i	j	k	l	m	n	o	p	q
——	——	——	——	——	——	——	——	——	——
——	——	——	——	——	——	——	——	——	——
ϕ 9.52	ϕ 9.52	ϕ 9.52	ϕ 9.52	ϕ 9.52	ϕ 9.52	ϕ 9.52	ϕ 9.52	ϕ 9.52	ϕ 9.52
ϕ 6.35	ϕ 6.35	ϕ 6.35	ϕ 6.35	ϕ 6.35	ϕ 6.35	ϕ 6.35	ϕ 6.35	ϕ 6.35	ϕ 6.35
5	10	10	5	5	10	10	5	5	10

INSTALLATION

• Pipe length

a+b+c+q=45 ≦ 100m (actual pipe length)
b+c+q=35 ≦ 40m (actual pipe length)
a+b+c+d+e+f+g+h+i+j+k+l+m+n+o+p+q=135 ≦ 200m (total pipe length)
Difference in height between outdoor unit and indoor units maximum 50m.
Difference in height between highest and lowest indoor unit maximum 15m.

• Selection of separation tube and header

	A	B	C	D	E
Model name	UTR-BP90MA	UTR-BP54MA	UTF-Y90A4A	UTF-Y90A4A	UTF-Y90A4A

• Additional charge

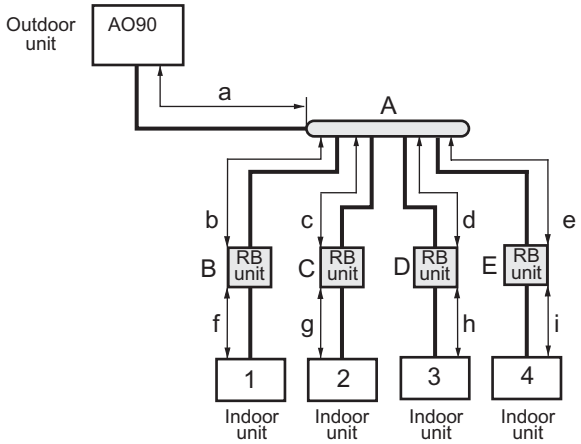
Liquid pipe (mm)	ϕ 12.70	ϕ 9.52	ϕ 6.35
Additional refrigerant (R407C) (kg/m)	0.136	0.063	0.025
Liquid pipe length (m)	10	35	90

INSTALLATION

• Additional refrigerant

1.2 + (0.136 x 10) + (0.063 x 35) + (0.025 x 90) = 7.02 (kg)

(2) Refrigerant system ②



NOTE:
Liquid pipe does not pass through theRB unit

• System configuration

	1	2	3	4	Total capacity
Example 1	AR18	AR18	AR30	AR36	
Capacity(kW)	5.3	5.3	8.8	10.5	29.9
Example 2	AR30	AR30	AR30	AR45	
Capacity(kW)	8.8	8.8	8.8	12.7	39.1

Total capacity of indoor unit (1 refrigerant system)
Example1 : Total capacity = 29.9 ≦ 36.4
Example2 : Total capacity = 39.1 > 36.4 ※Example 2 cannot be selected.

• Selection of pipe size (Example 1)

(unit : mm)

	a	b	c	d	e	f	g
Suction Gas Pipe	ϕ 28.58	ϕ 15.88	ϕ 15.88	ϕ 15.88	ϕ 19.05	——	——
Discharge Gas Pipe	ϕ 19.05	ϕ 12.70	ϕ 12.70	ϕ 12.70	ϕ 15.88	——	——
Gas Pipe	——	——	——	——	——	ϕ 15.88	ϕ 15.88
Liquid Pipe	ϕ 12.70	ϕ 6.35	ϕ 6.35	ϕ 9.52	ϕ 9.52	ϕ 6.35	ϕ 6.35
Length [m] (Example)	20	10	5	5	10	2	2

h	i
——	——
——	——
ϕ 15.88	ϕ 19.05
ϕ 9.52	ϕ 9.52
2	2

• Pipe length

a+b=32m ≦ 100m (actual pipe length)
Difference in height between outdoor unit and indoor unit maximum 50m.
Difference in height between the highest and the lowest indoor unit maximum 15m.
Form outdoor unit to the first header tube a=20m≦70m (actual pipe length)
From the first header tube to the farthest indoor unit e=12m≦40m (actual pipe length)
a+b+c+d+e+f+g+h+i=58 ≦ 200m (total pipe length)

INSTALLATION

• Selection of separation tube and RB unit

	A	B	C	D	E
Model name	UTR-HD906R	UTF-Y54A1A	UTF-Y54A1A	UTF-Y54A1A	UTF-Y54A1A

• Additional charge

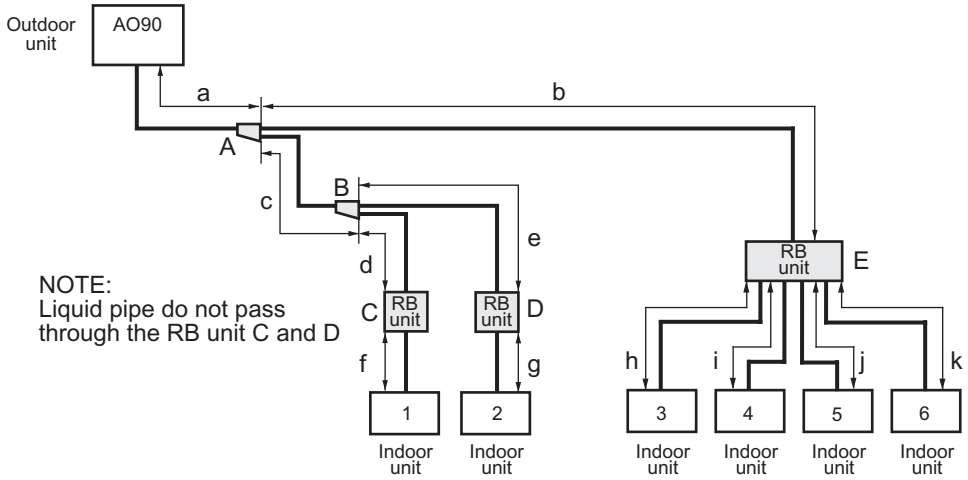
Liquid pipe (mm)	ϕ 12.70	ϕ 9.52	ϕ 6.35
Additional refrigerant (R407C) (kg/m)	0.136	0.063	0.025
Liquid pipe length (m)	20	19	19

• Additional refrigerant

1.2 + (0.136 x 20) + (0.063 x 19) + (0.025 x 19) = 5.60 (kg)

INSTALLATION

(3) Refrigerant system ③



• System configuration

	1	2	3	4	5	6	Total capacity
Example 1	AW24	AB36	AR9	AR9	AR9	AR9	
Capacity (kW)	6.9	10.5	2.8	2.8	2.8	2.8	28.6
Example 2	AW30	AB54	AR14	AR14	AR14	AR14	
Capacity (kW)	8.0	14.1	4.0	4.0	4.0	4.0	38.1

Total capacity of indoor unit (1 refrigerant system)
Example1 : Total capacity = 28.6 ≦ 36.4
Example2 : Total capacity = 38.1 > 36.4 ※Example 2 cannot be selected.

• Selection of pipe size (Example 1)

(unit : mm)

	a	b	c	d	e	f	g
Suction Gas Pipe	ϕ 28.58	ϕ 19.05	ϕ 19.05	ϕ 15.88	ϕ 19.05	——	——
Discharge Gas Pipe	ϕ 19.05	ϕ 15.88	ϕ 15.88	ϕ 12.70	ϕ 15.88	——	——
Gas Pipe	——	——	——	——	——	ϕ 15.88	ϕ 19.05
Liquid Pipe	ϕ 12.70	ϕ 9.52	ϕ 9.52	ϕ 6.35	ϕ 9.52	ϕ 6.35	ϕ 9.52
Length[m](Example)	10	20	5	5	10	2	2

h	i	j	k
——	——	——	——
——	——	——	——
ϕ 9.52	ϕ 9.52	ϕ 9.52	ϕ 9.52
ϕ 6.35	ϕ 6.35	ϕ 6.35	ϕ 6.35
10	5	5	10

• Pipe length

a+b+k = 40 ≦ 100m (actual pipe length)
b+k = 30 ≦ 40m (actual pipe length)
a+b+c+d+e+f+g+h+i+j+k= 84 ≦ 200m (total pipe length)
Difference in height between outdoor unit and indoor units maximum 50m.
Difference in height between highest and lowest indoor unit maximum 15m.

INSTALLATION

●Selection of separation tube and RB unit

	A	B	C	D	E
Model name	UTR-BP90MA	UTR-BP54MA	UTF-Y54A1A	UTF-Y54A1A	UTF-Y90A4A

●Additional charge

Liquid pipe (mm)	ϕ 12.70	ϕ 9.52	ϕ 6.35
Additional refrigerant (R407C) (kg/m)	0.136	0.063	0.025
Liquid pipe length (m)	10	37	37

●Additional refrigerant

1.2 + (0.136 x 10) + (0.063 x 37) + (0.025 x 37) = 5.82 (kg)

INSTALLATION

5-2. WIRING DESIGN

5-2-1. WIRING SPECIFICATION

Use		Size		Wire type	Remarks		
Power supply cable (mm^2)	Outdoor unit	Maximum	8.0	H07RN-F or equivalent	Three phase, 50Hz, 380-415V 4 Wire + Ground		※1
		Minimum	6.0				
	Indoor unit	Maximum	2.5	H07RN-F or equivalent	Single phase, 50Hz, 220-240V 2 Wire + Ground		※2
		Minimum	1.5				
Transmission cable (mm^2)		0.33		Shielded Level 4 22AWG (0.65mm)	Non-polar, Twisted pair, Solid core diameter 0.65mm		※3
Remote controller cable (mm^2)		0.33		Sheathed vinyl cord cable	Polar 3-core	Wired remote controller Simple remote controller	※4
Remote controller cable (mm^2)		0.33		Shield	Polar 3-core	Group remote controller External switch controller	
External input cable (mm^2)		0.33		Shield	Twist pair polar 2-core	External switch controller	

INSTALLATION

INSTALLATION

NOTE:Install in accordance with local rules and regulations.

※1,2 The ground wire is not included in this cable.
Always ground the unit.

※3 Use the shielded wire specified and always ground it.
[22AWG Level 4 cable with shielded(National Electrical Manufacturers Association (NEMA)
**differs from the Category 4 specification proposed by the Electronic Industries Association/
Telecommunication Industry Association (EIA/TIA)**]

Total wiring length 2000m. However, when wiring length exceeds 500m, a signal amplifier (option) is required.
Do not bundle the transmission cable with other wires. Otherwise, transmit-receive with a transmission line is not only impossible, but a malfunction may occur.

※4 10m cable attached.(excluded some models)
Use the shielded cable in accordance with the standards of the country.
Wiring length of a remote controller group should be within 500m.

	Model	Field fuse	Circuit breaker
Fuse capacity	Outdoor unit	40A ※5	40A 100mA 0.1sec or less
	Indoor unit	20A ※6	20A 40mA 0.1sec or less

※5 per outdoor unit
※6 per refrigerant system.

Install the knife switch (contact gap 3mm or more) near the indoor unit for ease of maintenance.(A breaker can be used instead of the knife swicth for the outdoor unit.

5-2-2. POWER SUPPLY CABLE WIRING

■ POWER SUPPLY CABLE SPECIFICATION

✳ A separated power supply cable must be provided for the outdoor unit and indoor unit.
Outdoor unit : 3ϕ 4W 50Hz 380 - 415V
Indoor unit : 1ϕ 50Hz 220 - 240V

✳ Use a circuit breaker of 40A or more for every outdoor unit.

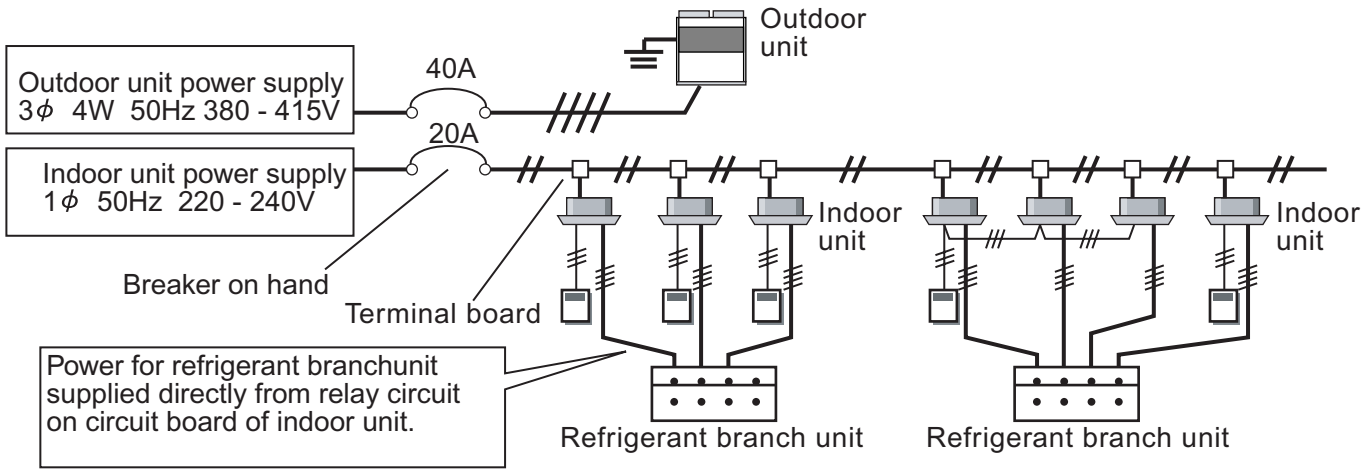
✳ The indoor unit shall be connected up to one refrigerant system, and a circuit breaker of 20A or more should be used.

⚠CAUTION

1. Above "Wire size" and "Fuse capacity" are minimum value.
2. Regulation of wire size and circuit breaker differs from each locality, please refer in accordance with local rules.
3. Specific wiring requirement should be applied Type 245 IEC 57 or equivalent.
4. To prevent the electrical noise malufunction and hazards from insulation failure, the unit should be connected to ground.
5. A disconnect switch may be required for ease of maintenance in accordance with local regulation for each unit.
   Please check the local rules and regulations.
   Make the wire length between disconnect switch and unit terminal as short as possible.
6. When connecting the indoor unit power supply from part of a 3-phase power source, recommend to take the power from each phase uniformly to prevent unbalance
7. All field wiring and components must be provided by a licensed electrician.
8. Use copper conductors only.

INSTALLATION

Example : Power supply cable wiring for heat recovery type. (using terminal board for indoor unit)



⚠ CAUTION

- Except for EMERGENCY, never turn off main as well as sub breaker of the indoor units during operation. It will cause compressor failure as well as water leakage.
- First, turn off the power to the indoor unit by operating the control unit, converter or external input device and then cut the breaker.
- Make sure to operate through the control unit, converter or external input device.
- When the breaker is designed, locate it at a place where the users cannot start and stop in the daily work.
- Regulation of wire size and circuit breaker differs from each locality, please refer in accordance with local rules.

INSTALLATION

5-2-3. TRANSMISSION LINE

■ TRANSMISSION WIRING SPECIFICATIONS

Use	Size	Wire type	Remarks
Transmission cable	0.33mm^2	22AWG LEVEL 4 (NEMA) non-polar 2core, twisted pair solid core diameter 0.65mm	LONWORKS® compatible cable

NOTE

∗ Do not bundle and wire transmission line with other wiring.

■ WIRING RULES

∗ In the following cases, SIGNAL AMPLIFIER is required.

(1) When the total length of the transmission line exceeded 500 m.
AB+BC+BD+DE+EF > 500 m (Fig. 1)

(2) When the total number of units* is over 64.

∗ Transmission line length between each unit*: MAX 400 m.

∗ Total transmission line length: MAX 2000 m
AB+BC+BD+DE+EF+EG+GH < 2000 m (Fig. 2)

∗ When a SIGNAL AMPLIFIER is installed, network is divided into two network segments.
In a network segment (NS), divided by a SIGNAL AMPLIFIER, have to keep the following facts.

(1)Total transmission line length: MAX 500 m
AB+BC+BD < 500 m (Fig. 2)

(2)The total number of units* : MAX 64

(3)The number of terminal resistor : 1

(4)The total number of control units : 2

∗ Arrange so that there is one terminal resistor for each network segment.

∗ Always take a ground from both ends of transmission line.

Fig. 1

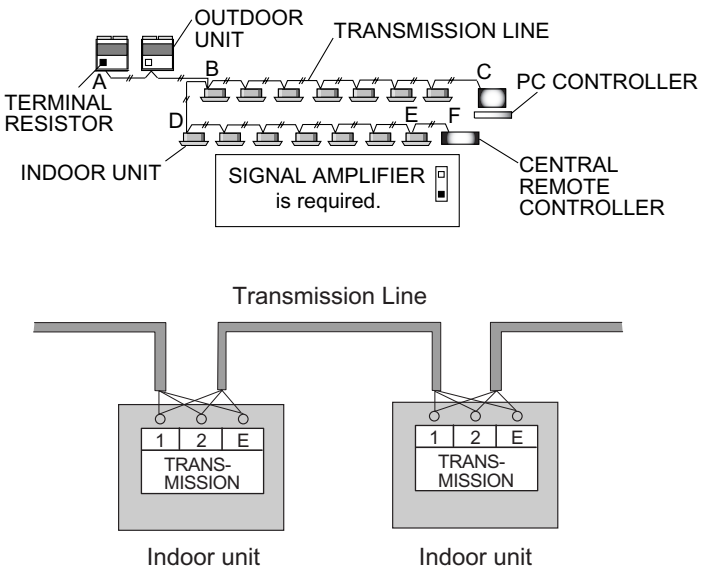
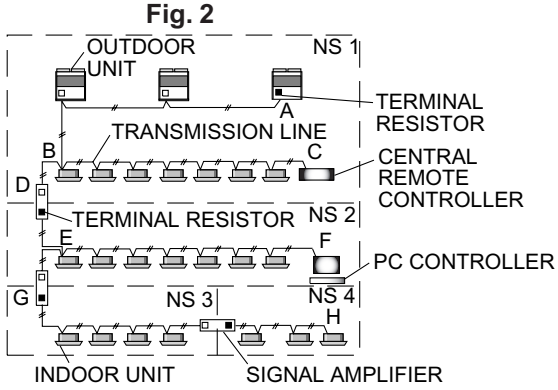


Fig. 2



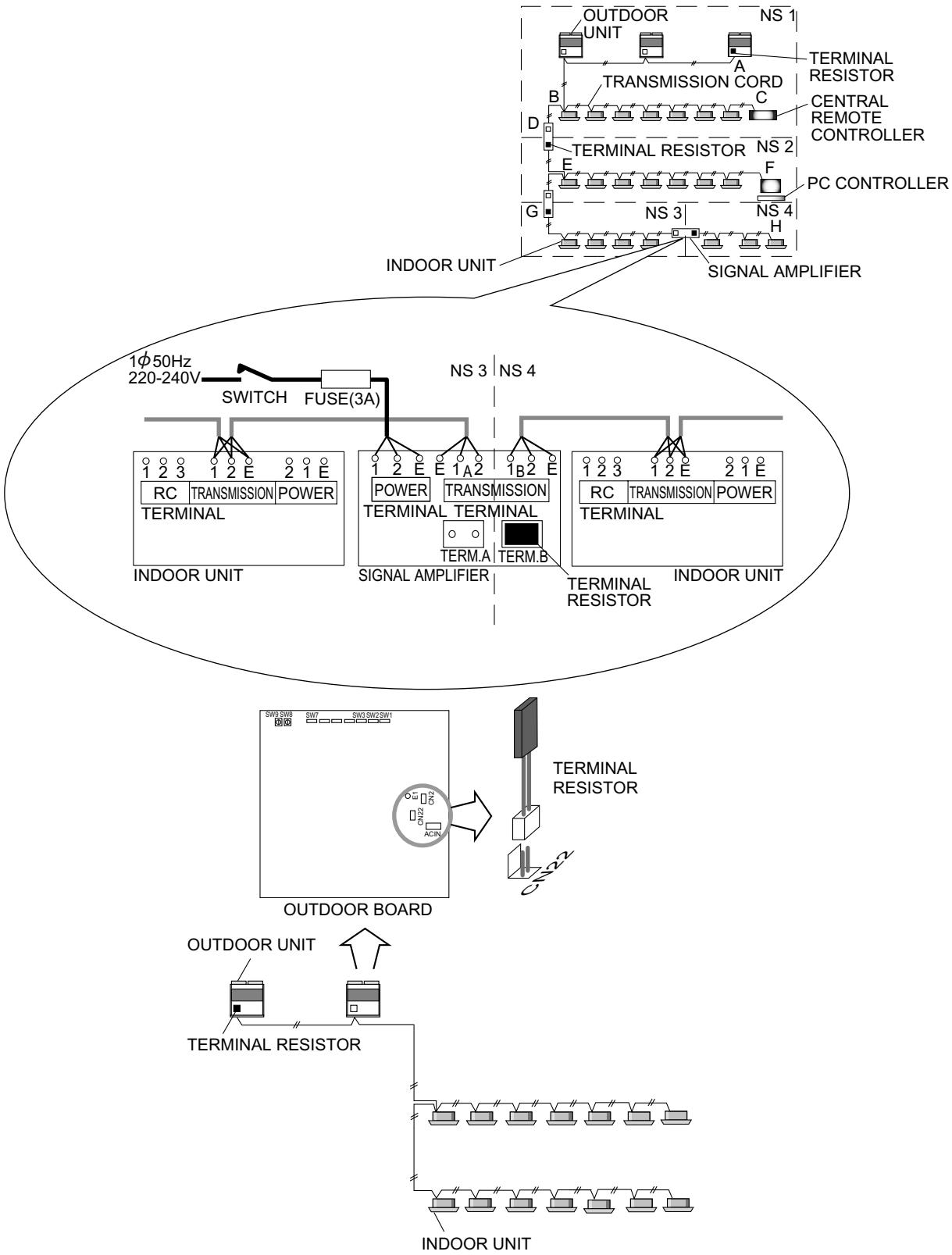
Note : Unit* means indoor unit, outdoor unit, central remote controller (CRC) and PC controller, signal amplifier, single split adaptor, network convertor etc..
Control units means central remote controller and PC controller ant network convertor for LONWORKS.

INSTALLATION

■CHECK POINT

* Arrange so that there is no transmission cord between each network segment except the transmission cord which passed through the signal amplifier.
* Arrange so that there is one terminal resistor for each network segment.
  If necessary,remove the terminal resistor which connected temporarily to the CN22 terminator of the circuit board for the outdoor unit.

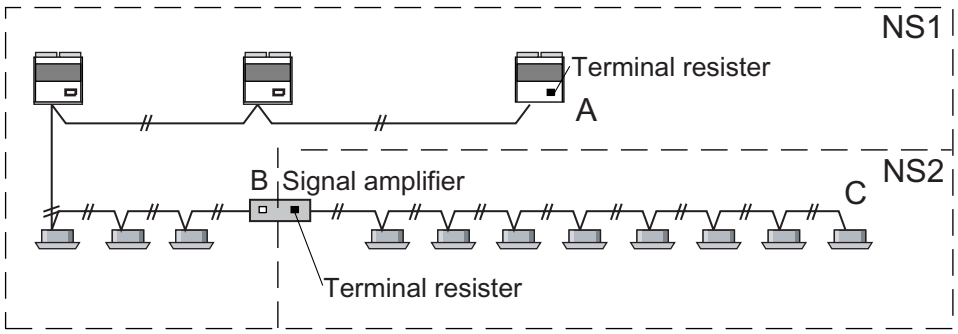
Fig. 3



INSTALLATION

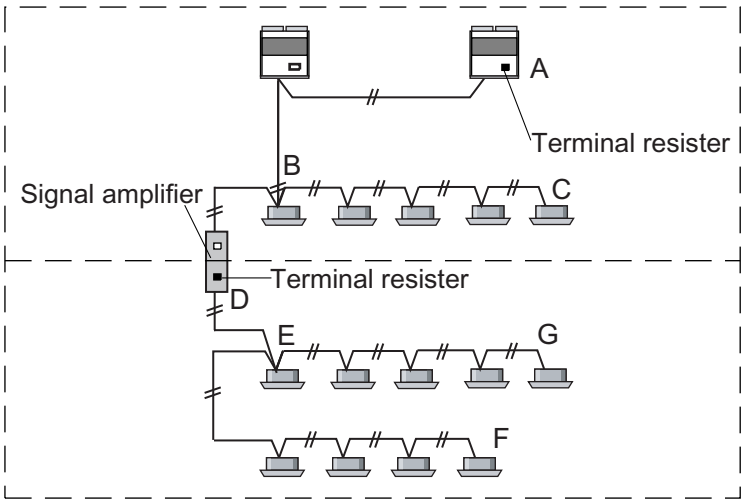
■ EXAMPLE OF INSTALL SIGNAL AMPLIFIER (UTR-YRPC)

Example 1 : In case of series connection



between A and C 800m
NS1 : between A and B 400m≦500m
NS2 : between B and C 400m≦500m

Example 2 : In case of branch connection

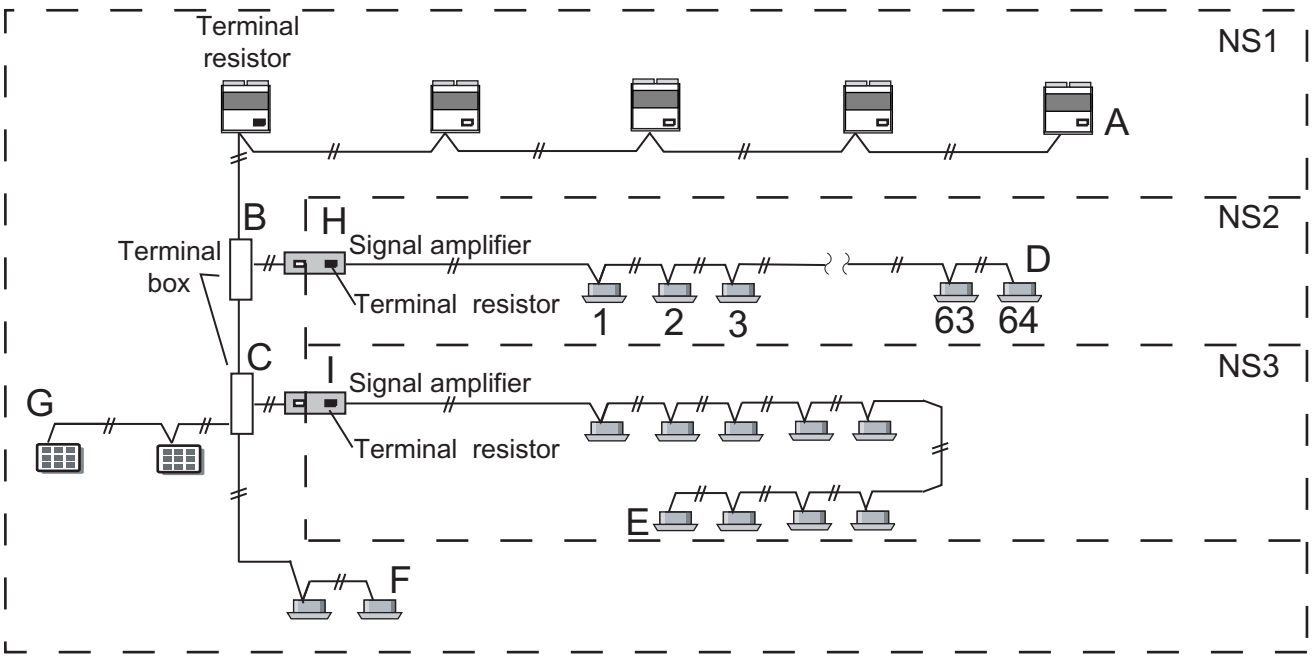


between A and B 100m
between B and C 200m
between B and D 200m
between D and E 200m
between E and F 100m
between E and G 100m
Total wiring length 900m
NS1 : AB+BC+BD≦500m
NS2 : DE+EF+EG≦500m

Note
Install the unit in a place where the total length of the wiring below the signal amplifier is within 500m.

INSTALLATION

Example 3 : Branch connection and in case of over 64 units



between A and B 100m
between B and C 100m
between B and D 200m
between C and E 500m
between C and F 100m
between C and G 100m
between B and H 10m
between C and I 10m

Total wiring length 1100m

Number of indoor unit 64

NS1 : AB+BC+CG+CF+BH+CI ≦ 500m
NS2 : Total equipments between H and D ≦ 64
NS3 : IE ≦500m

INSTALLATION

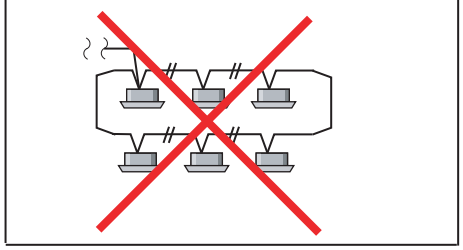
5-2-4. WIRING SEPARATION

■ TRANSMISSION LINE SEPARATION RULES

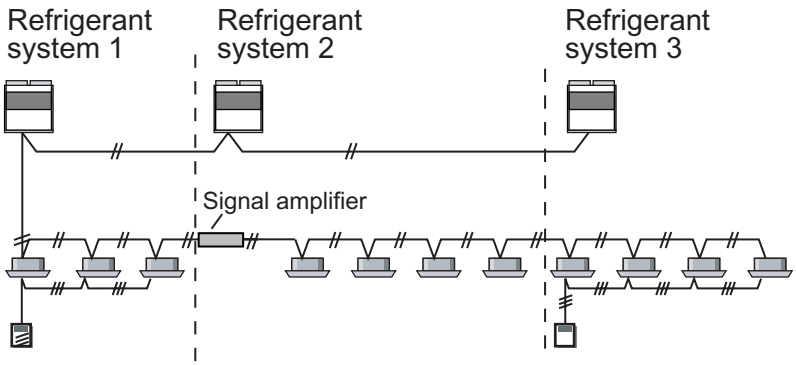
* The transmission line between indoor unit, outdoor unit and controllers can be connected by one cable.
* Terminal board available on the market or the ones inside the indoor unit or outdoor should be used for transmission line separation.
* Connection of three or more lines may cause poor communication for one terminal. In this case, please use a terminal box.

NOTE

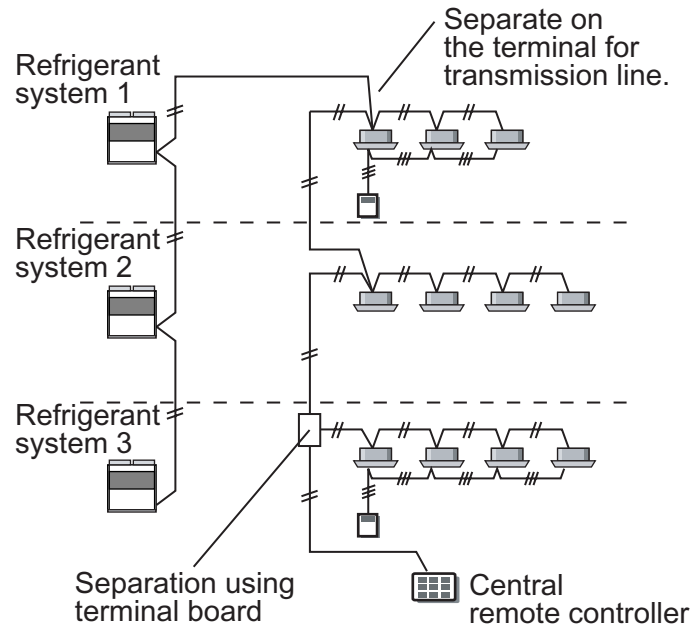
· Do not loop.



Example 1 : Connecting each outdoor and indoor unit with one connection wiring.

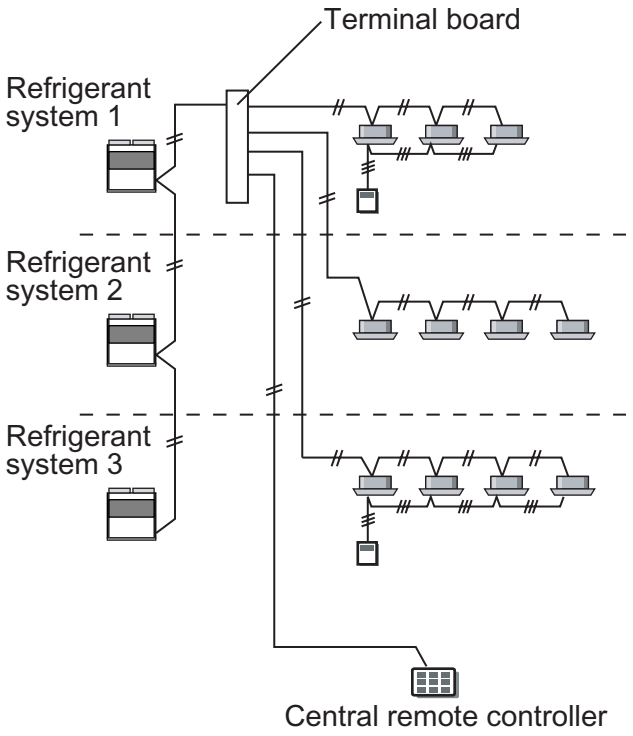


Example 2 : Separating transmission line.



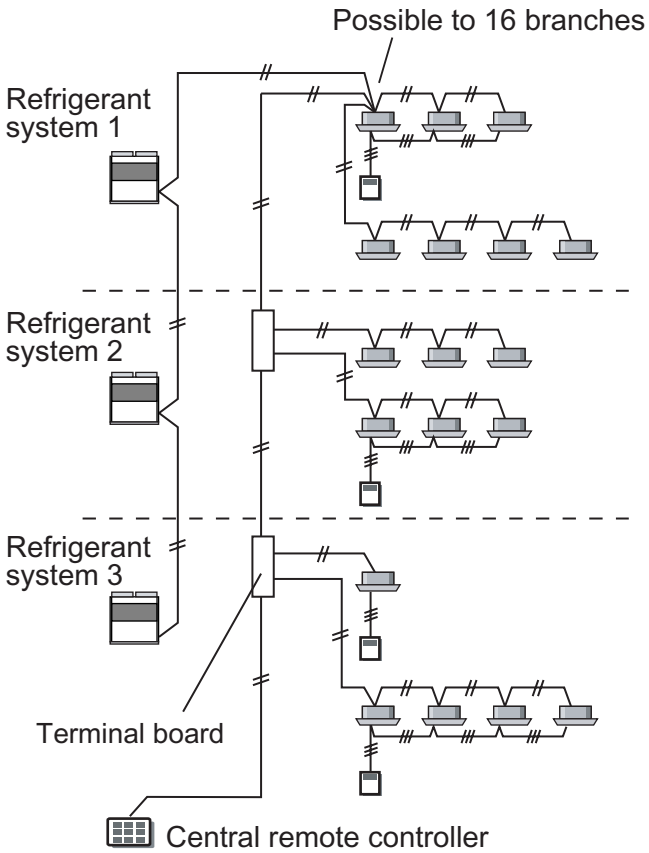
INSTALLATION

Example 3 : Separation wiring from one terminal board radially.

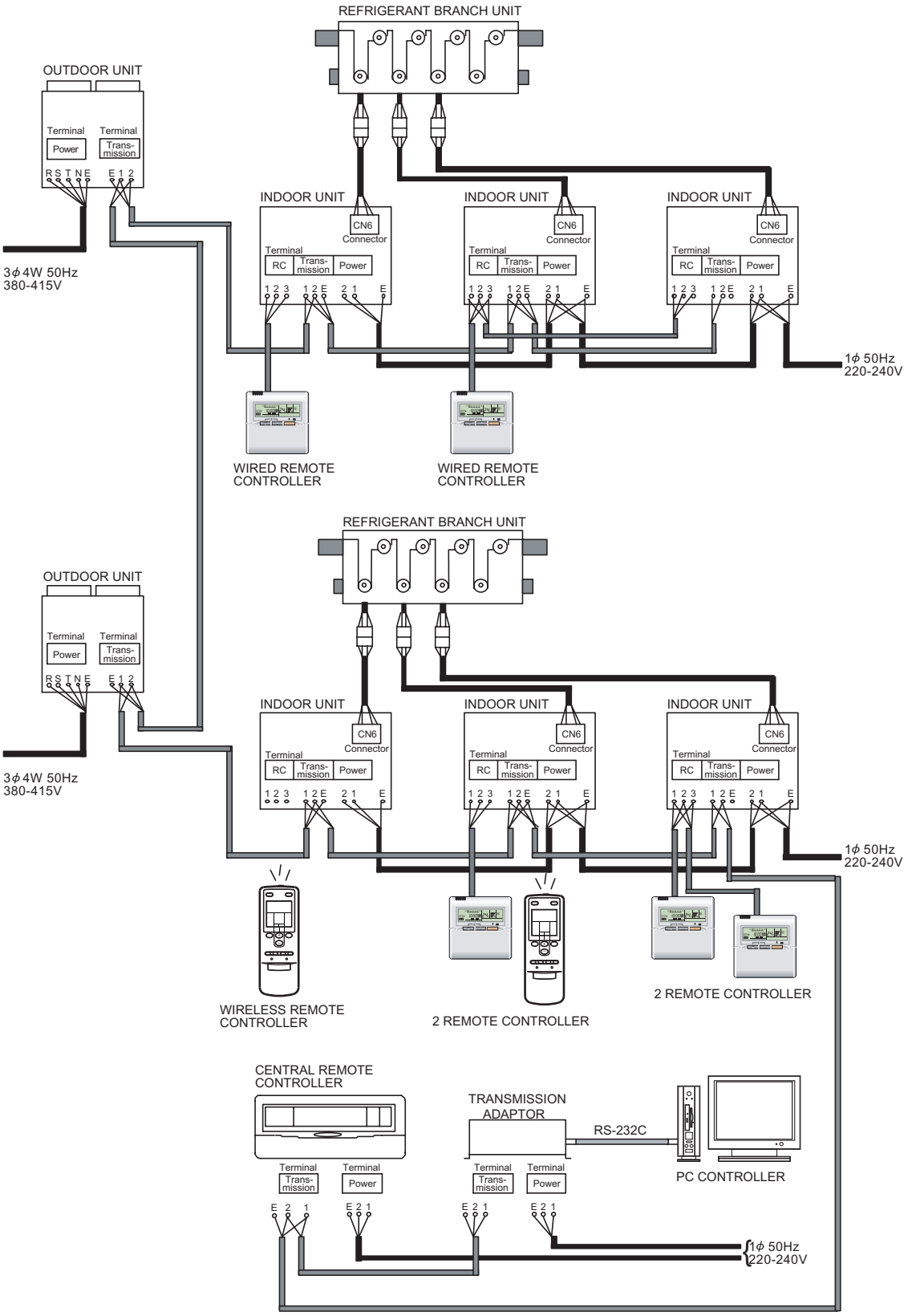


INSTALLATION

Example 4 : Combination of example 2 and 3



5-2-5. WIRING EXAMPLE



INSTALLATION

5-3. SYSTEM SETTING

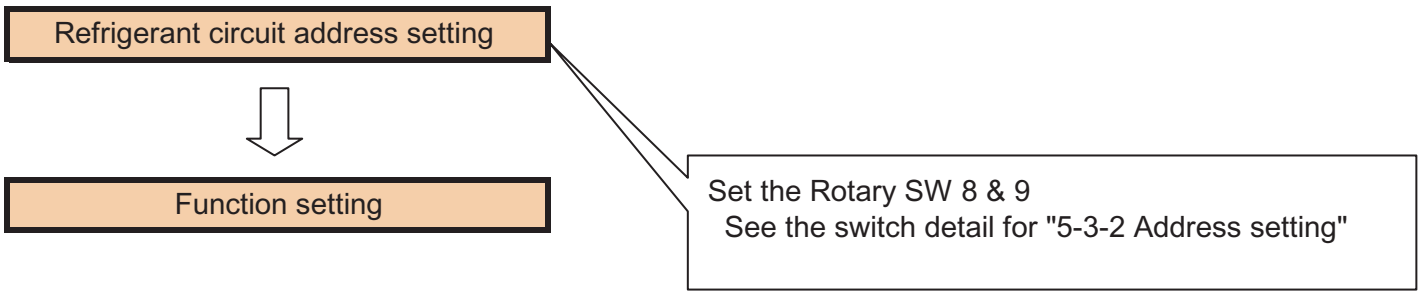
5-3-1. SYSTEM TYPE SETTING

Set the DIP switch to the corresponding system type as shown in the table.
Do not use a nonexistent switch combination.

Note
✳ Perform the system setting and address setting , before turning on the power.
✳ For the air conditioner to operate satisfactorily, perform the correct setting.

■ OUTDOOR UNIT SETTING

(◆ . . . Factory Setting)

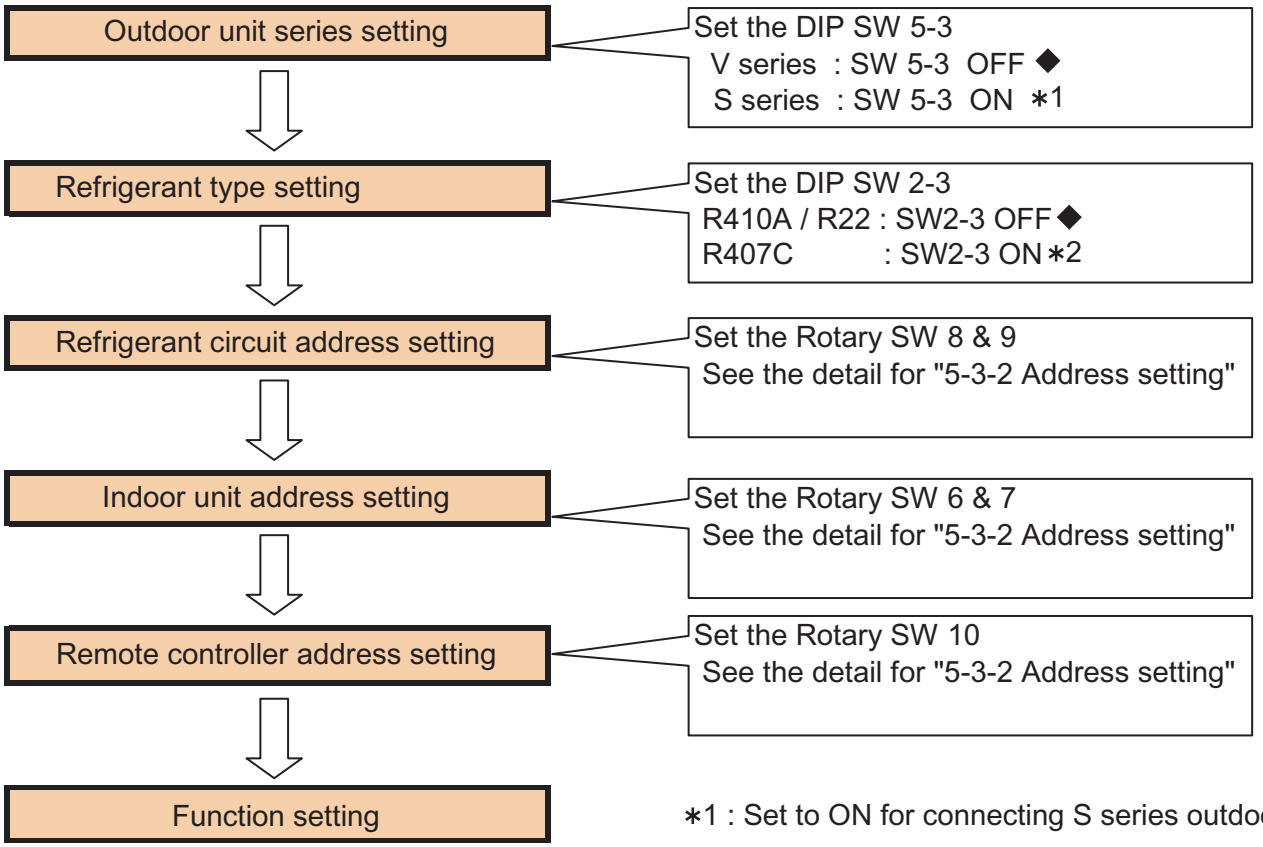

Refrigerant circuit address setting
Function setting
Set the Rotary SW 8 & 9
See the switch detail for "5-3-2 Address setting"

INSTALLATION

■ INDOOR UNIT SETTING

SW Number shows for other than compact wall mounted type.
Please refer to the correct SW position for 5-4 Function Setting.

(◆ . . . Factory Setting)


Outdoor unit series setting
Set the DIP SW 5-3
V series : SW 5-3 OFF ◆
S series : SW 5-3 ON ∗1
Refrigerant type setting
Set the DIP SW 2-3
R410A / R22 : SW2-3 OFF ◆
R407C : SW2-3 ON ∗2
Refrigerant circuit address setting
Set the Rotary SW 8 & 9
See the detail for "5-3-2 Address setting"
Indoor unit address setting
Set the Rotary SW 6 & 7
See the detail for "5-3-2 Address setting"
Remote controller address setting
Set the Rotary SW 10
See the detail for "5-3-2 Address setting"
Function setting

∗1 : Set to ON for connecting S series outdoor unit.

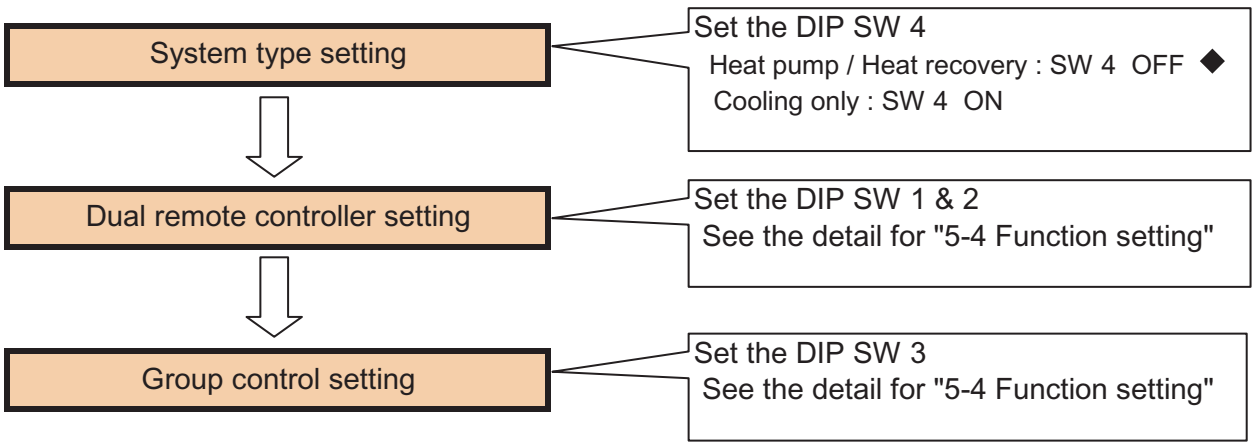
∗2 : Set to ON for connecting R407C outdoor unit.

INSTALLATION

INSTALLATION

■ REMOTE CONTROLLER SETTING

WIRED,SIMPLE REMOTE CONTROLLER

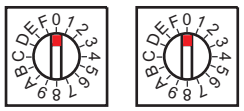
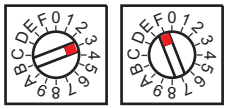
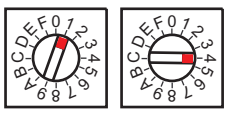
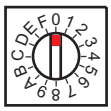

System type setting
Set the DIP SW 4
Heat pump / Heat recovery : SW 4 OFF ◆
Cooling only : SW 4 ON
Dual remote controller setting
Set the DIP SW 1 & 2
See the detail for "5-4 Function setting"
Group control setting
Set the DIP SW 3
See the detail for "5-4 Function setting"

∗Other than above unit , Please refer the "5-4 Function setting " and installation manual.

5-3-2. ADDRESS SETTING

For this system, each address should be preset before operation.
Please refer following table for outdoor unit, indoor unit each remote controller.

■ KINDS OF ADDRESS AND SETTING RANGE

UNIT	SETTING	SETTING RANGE	TYPE OF SWITCH	REMARKS
Outdoor unit	Refrigerant circuit address	0～99	Setting example 0  SW 9 SW 8	Arbitrary numbers can be set in range of 00-99
Indoor unit	Refrigerant circuit address	0～99	**■Manual address setting** ● PCB Type A ✳1  SW 9 SW 8 **■Infrared address setting** After turning on the power, the wireless remote controller can be used to set the address. For details, refer to “5-3-4". Set this switch to 00 at factory shipment.	Arbitrary numbers can be set in range of 00-99
	Indoor unit address	0～63 ✳4	**■Manual address setting** ● PCB Type A ✳1  SW 7 SW 6 **■Infrared address setting** After turning on the power, the wireless remote controller can be used to set the address. For details, refer to “5-3-4". Set this switch to 00 at factory shipment.	Arbitrary numbers can be set in range of 00-63 ✳4 See the setting method 5-3-3
	Remote controller address	00～15	● PCB Type A ✳1  SW 10	Set from 0 to 15 in sequence
Wired, Simple remote controller	Dual remote controller switch	ON/OFF	DIP SW 1,2	OFF : Not terminated ON : Terminated
	Number of indoor unit connection	ON/OFF	DIP SW 3	Number of indoor unit OFF : 1 unit ON : multiple units
Central remote controller	Central remote controller address	0～15	Initial setting	
Group remote controller	Group remote controller address	0～3	Initial setting	

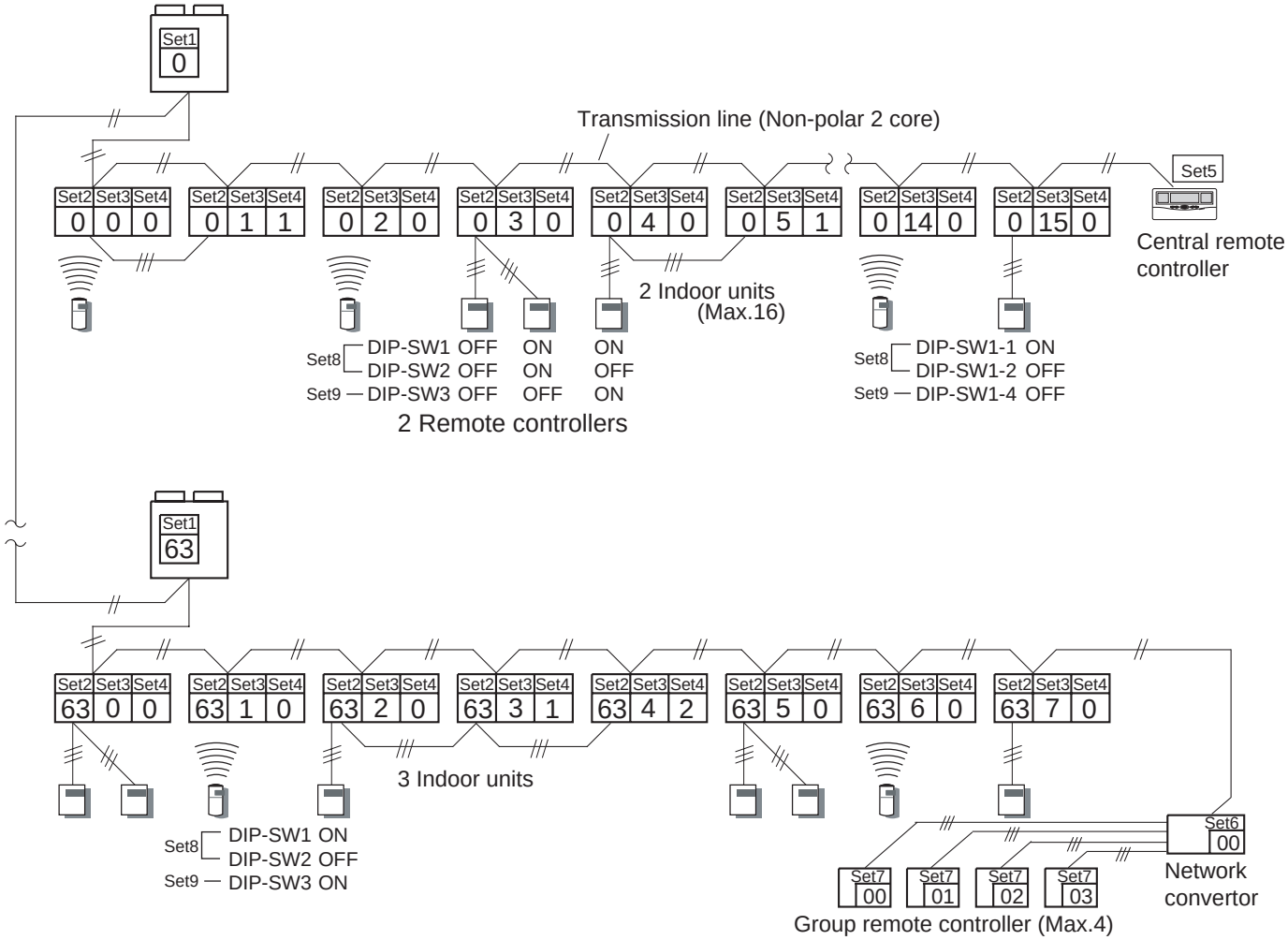
✳1 PCB Type A : • Compact Cassette Type • Cassette Type • Compact Duct Type • Low Static Pressure Duct Type
• Duct Type • Floor / Ceiling Type • Ceiling Type • Wall Mounted Type • Ceiling Wall Type

✳4 Indoor unit address can be set up to 63. However maximum connectable indoor unit is 16 units

INSTALLATION

INSTALLATION

■ SETTING EXAMPLE



• Outdoor unit setting

Set1: Refrigerant circuit address (Rotary SW9,8)

• Central remote controller setting

Set5: Controller address (Max.16)

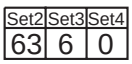
• Group remote controller setting

Set7: Controller address (Max.4)

• Wired, Simple remote controller setting

Set8: Dual remote controller (DIP-SW1,2)
Set9: Group control (DIP-SW3)

• Indoor unit setting



Set2: Refrigerant circuit address
Set3: Indoor unit address
Set4: Remote controller address

	Set2		Set3		Set4
	Refrigerant circuit address		Indoor unit address		Remote controller address
	Second digit	First digit	Second digit	First digit	First digit
※1 PCB TYPE A	Rotary SW 9	Rotary SW 8	Rotary SW 7	Rotary SW 6	Rotary SW 10

※1 : PCB TYPE A : Compact Cassette type Cassette type Compact Duct type
Low Static Pressure Duct type Duct type Floor/Ceiling type
Ceiling type Wall Mounted type Ceiling Wall type

※ Instructions for setting up the address

1. The refrigerant circuit address of the indoor and outdoor units can be set to optional numbers in the range of 0 to 99.
2. The Indoor unit address can be set to optional numbers in the range of 0 to 63.
3. Set the remote controller address in the order of 0,1,2, . . . ,15.(Blank is not allowed)
4. The central remote controller address can be set to optional numbers in the range of 0 to 15.
5. The total numbers of indoor units ≦ 16.

INSTALLATION

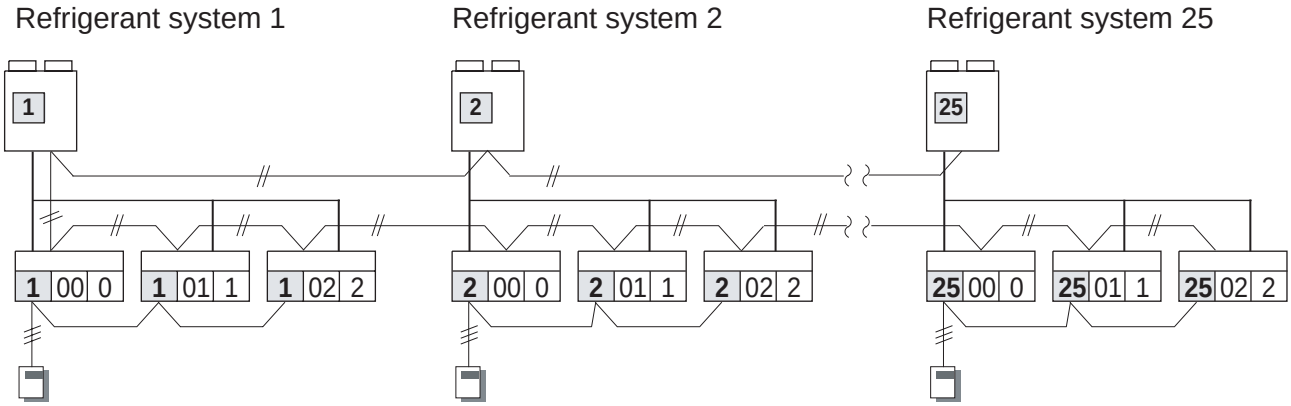
5-3-3. MANUAL ADDRESS SETTING METHOD

■ ADDRESS SETTING DESCRIPTION

● Refrigerant circuit address (set 1)

In case of 2 or more refrigerant system in VRF network system, each refrigerant system should be set an exclusive refrigerant circuit address.

Refrigerant system : It means same refrigerant circuit which has connected between outdoor unit and indoor unit by piping.



● Example

✳ Outdoor unit

Refrigerant circuit address	SW setting	
	Rotary SW 9	Rotary SW 8
1	0	1
11	0	B
25	1	9
50	3	2

Please refer to the conversion table

✳ Indoor unit

Refrigerant circuit address	PCB TYPE A ✳1	
	Rotary SW 9	Rotary SW 8
1	0	1
11	0	B
25	1	9
50	3	2

Please refer to the conversion table

Setting range 00 - 99(Arbitrary numbers can be set)

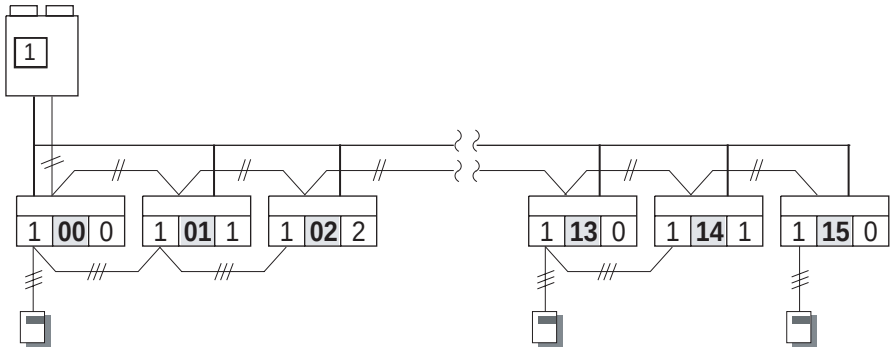
All the indoor unit and outdoor unit in same refrigerant circuit should be set same address.

✳1 PCB Type A : • Compact Cassette Type • Cassette Type • Compact Duct Type
• Low Static Pressure Duct Type • Duct Type • Floor / Ceiling Type
• Ceiling Type • Wall Mounted Type • Ceiling Wall Type

INSTALLATION

● Indoor unit address (set 3)

Each indoor unit in same refrigerant system should be set an exclusive indoor unit address.



Indoor unit address	PCB TYPE A ✱1	
	Rotary SW 7	Rotary SW 6
3	0	3
11	0	B
30	1	E
47	2	F

Please refer to the conversion table

Setting range 00 - 63(Arbitrary numbers can be set)

Connectable indoor units are maximum 16 units.

✱1 PCB Type A : • Compact Cassette Type • Cassette Type • Compact Duct Type
• Low Static Pressure Duct Type • Duct Type • Floor / Ceiling Type
• Ceiling Type • Wall Mounted Type • Ceiling Wall Type

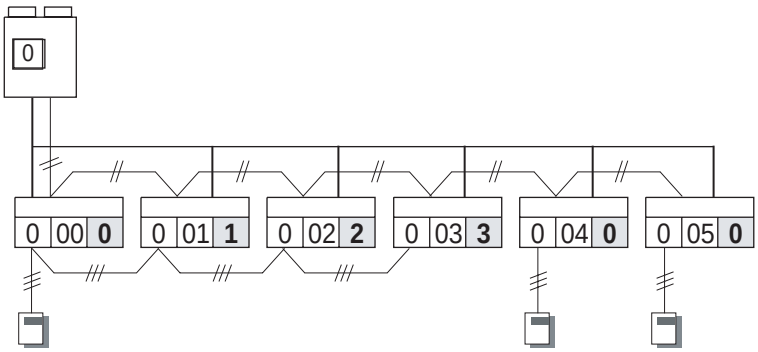
INSTALLATION

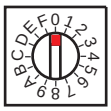
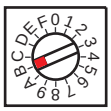
● Remote controller address (set 4)

1 individual remote controller can be controlled Max.16 indoor unit with connecting remote controller cable.

These units connecting by remote controller cable regards as remote controller group.

Even 1 indoor unit as 1 or no remote controller connection regards 1 remote controller group.

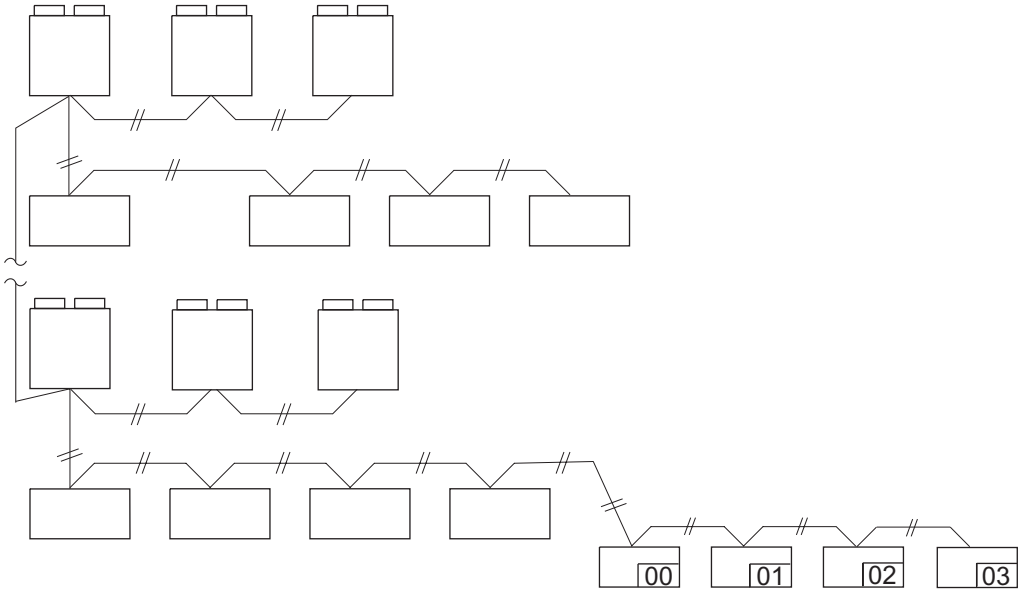


Remote controller address	✱1 PCB TYPE A
	Rotary SW 10
0	 0
1	1
11	 B
15	F

✱1 PCB Type A : • Compact Cassette Type • Cassette Type • Compact Duct Type
• Low Static Pressure Duct Type • Duct Type • Floor / Ceiling Type
• Ceiling Type • Wall Mounted Type • Ceiling Wall Type

INSTALLATION

● Central remote controller address (set 5)

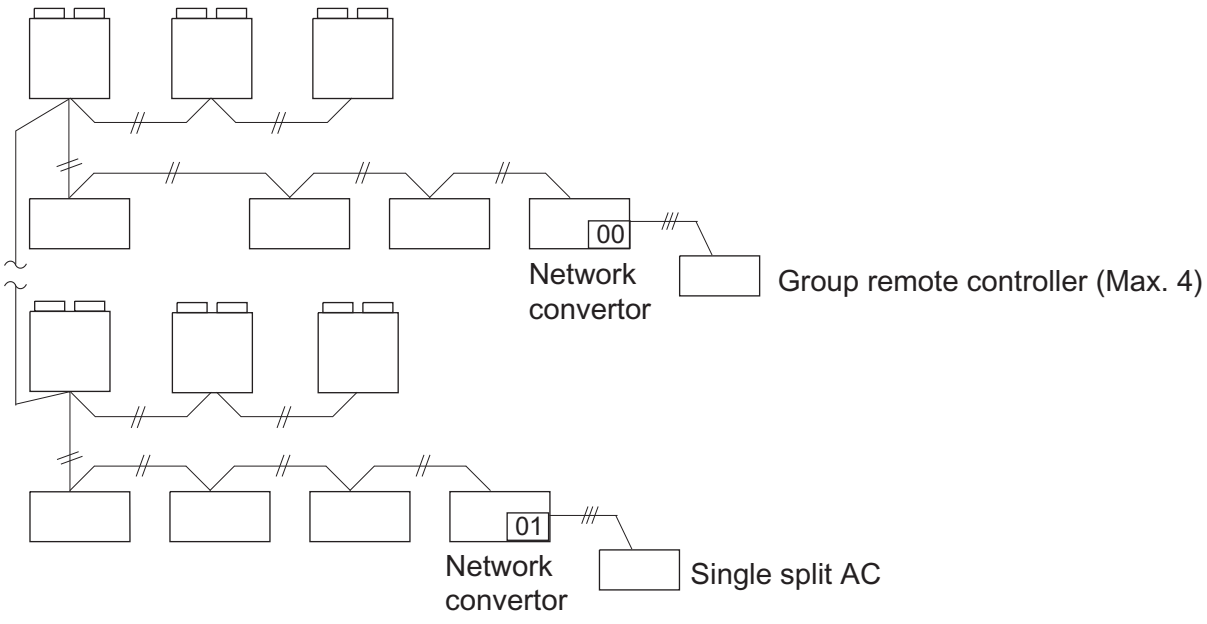


Central remote controller (Max. 16)

✳ Set central remote controller address first, to conduct the initial setting of it.
Refer to the "setting manual" for details.

INSTALLATION

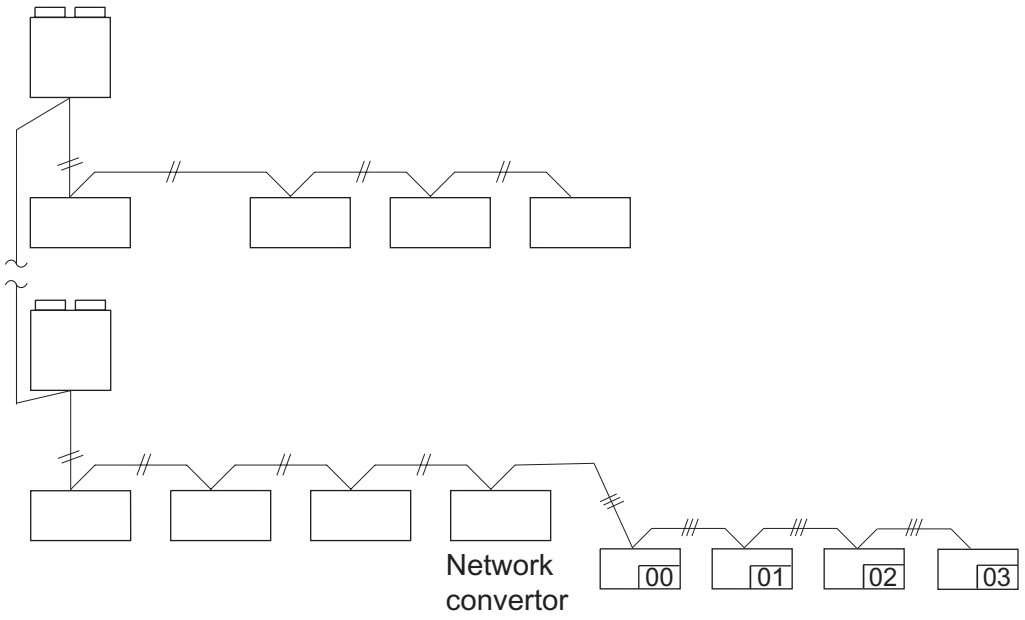
● Network convertor address (set 6)



Rotary SW 111

✳ Set the Rotary SW 111 on network convertor PCB.
Refer to the installation manual for details.

● Group remote controller address (set 7)



✳ Set group remote controller address first, to conduct the initial setting of it.

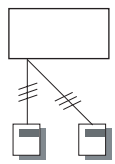
INSTALLATION

● Dual remote controller switch (set 8)

When 2 sets of wired remote controllers are connected to the remote control group, turn the DIP SW 1 and 2 of Master Remote Controller off.

✳ Slave remote controller will not be valid for timer setting.

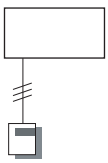
✳ Last command is priority.



[Master] [Slave]

SW1 OFF ON
SW2 OFF ON

Remote controller unit PCB
Setting by DIP SW 1 and 2

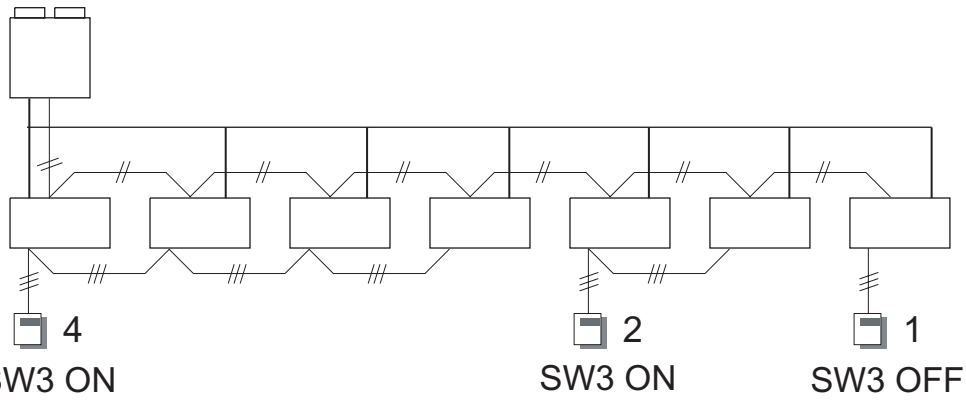


[Master]

SW1 ON
SW2 OFF

When only 1 remote controller will connect, this switch 1 must be set ON.

● Number of indoor unit connection (set 9)



Remote controller PCB
Setting by DIP SW 3

■ ADDRESS CONVERSION TABLE FOR MANUAL SETTING

● Refrigerant circuit address

In the case of a multiple refrigerant system, each refrigerant system should be set an exclusive refrigerant circuit address.

Conversion table of refrigerant circuit address and rotary switch setting are shown in the table below.

Do not use a nonexistent switch setting combination.

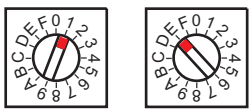
Rotary SW setting is formed with the Hexadecimal notation.

Refrigerant circuit address conversion table (Outdoor unit)

(SW9 : "0" , SW8 : "0" - - - Factory setting)

Refrigerant circuit address	Rotary Switch setting		Refrigerant circuit address	Rotary Switch setting		Refrigerant circuit address	Rotary Switch setting		Refrigerant circuit address	Rotary Switch setting		Refrigerant circuit address	Rotary Switch setting	
	SW9	SW8		SW9	SW8		SW9	SW8		SW9	SW8		SW9	SW8
0	0	0	20	1	4	40	2	8	60	3	C	80	5	0
1	0	1	21	1	5	41	2	9	61	3	D	81	5	1
2	0	2	22	1	6	42	2	A	62	3	E	82	5	2
3	0	3	23	1	7	43	2	B	63	3	F	83	5	3
4	0	4	24	1	8	44	2	C	64	4	0	84	5	4
5	0	5	25	1	9	45	2	D	65	4	1	85	5	5
6	0	6	26	1	A	46	2	E	66	4	2	86	5	6
7	0	7	27	1	B	47	2	F	67	4	3	87	5	7
8	0	8	28	1	C	48	3	0	68	4	4	88	5	8
9	0	9	29	1	D	49	3	1	69	4	5	89	5	9
10	0	A	30	1	E	50	3	2	70	4	6	90	5	A
11	0	B	31	1	F	51	3	3	71	4	7	91	5	B
12	0	C	32	2	0	52	3	4	72	4	8	92	5	C
13	0	D	33	2	1	53	3	5	73	4	9	93	5	D
14	0	E	34	2	2	54	3	6	74	4	A	94	5	E
15	0	F	35	2	3	55	3	7	75	4	B	95	5	F
16	1	0	36	2	4	56	3	8	76	4	C	96	6	0
17	1	1	37	2	5	57	3	9	77	4	D	97	6	1
18	1	2	38	2	6	58	3	A	78	4	E	98	6	2
19	1	3	39	2	7	59	3	B	79	4	F	99	6	3

Example : Refrigerant circuit address 30 : Set Rotary SW9 to "1" and SW8 to "E"



SW9 SW8

INSTALLATION

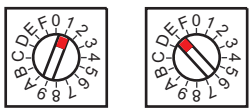
Refrigerant circuit address conversion table (Indoor unit)

✱1 PCB Type A : • Compact Cassette Type • Cassette Type • Compact Duct Type
• Low Static Pressure Duct Type • Duct Type • Floor / Ceiling Type
• Ceiling Type • Wall Mounted Type • Ceiling Wall Type

(SW9 : "0" , SW8 : "0" - - - Factory setting)

Refrigerant circuit address	Rotary Switch setting		Refrigerant circuit address	Rotary Switch setting		Refrigerant circuit address	Rotary Switch setting		Refrigerant circuit address	Rotary Switch setting		Refrigerant circuit address	Rotary Switch setting	
	SW9	SW8		SW9	SW8		SW9	SW8		SW9	SW8		SW9	SW8
0	0	0	20	1	4	40	2	8	60	3	C	80	5	0
1	0	1	21	1	5	41	2	9	61	3	D	81	5	1
2	0	2	22	1	6	42	2	A	62	3	E	82	5	2
3	0	3	23	1	7	43	2	B	63	3	F	83	5	3
4	0	4	24	1	8	44	2	C	64	4	0	84	5	4
5	0	5	25	1	9	45	2	D	65	4	1	85	5	5
6	0	6	26	1	A	46	2	E	66	4	2	86	5	6
7	0	7	27	1	B	47	2	F	67	4	3	87	5	7
8	0	8	28	1	C	48	3	0	68	4	4	88	5	8
9	0	9	29	1	D	49	3	1	69	4	5	89	5	9
10	0	A	30	1	E	50	3	2	70	4	6	90	5	A
11	0	B	31	1	F	51	3	3	71	4	7	91	5	B
12	0	C	32	2	0	52	3	4	72	4	8	92	5	C
13	0	D	33	2	1	53	3	5	73	4	9	93	5	D
14	0	E	34	2	2	54	3	6	74	4	A	94	5	E
15	0	F	35	2	3	55	3	7	75	4	B	95	5	F
16	1	0	36	2	4	56	3	8	76	4	C	96	6	0
17	1	1	37	2	5	57	3	9	77	4	D	97	6	1
18	1	2	38	2	6	58	3	A	78	4	E	98	6	2
19	1	3	39	2	7	59	3	B	79	4	F	99	6	3

Example : Refrigerant circuit address 30 : Set Rotary SW9 to "1" and SW8 to "E"



SW9 SW8

INSTALLATION

● Indoor unit address

Each indoor unit in a refrigerant system should be set an exclusive indoor unit address with rotary switches or DIP switches.
Conversion table of indoor unit address and rotary switch setting are shown in the table below.
Do not use a nonexistent switch setting combination.
Rotary SW setting is formed with the Hexadecimal notation

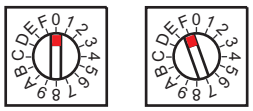
Indoor unit address conversion table

✱1 PCB Type A : • Compact Cassette Type • Cassette Type • Compact Duct Type
• Low Static Pressure Duct Type • Duct Type • Floor / Ceiling Type
• Ceiling Type • Wall Mounted Type • Ceiling Wall Type

(SW7 : "0" , SW6 : "0" - - - Factory setting)

Indoor unit address	Rotary Switch setting		Indoor unit address	Rotary Switch setting		Indoor unit address	Rotary Switch setting		Indoor unit address	Rotary Switch setting		Indoor unit address	Rotary Switch setting	
	SW7	SW6		SW7	SW6		SW7	SW6		SW7	SW6		SW7	SW6
0	0	0	13	0	D	26	1	A	39	2	7	52	3	4
1	0	1	14	0	E	27	1	B	40	2	8	53	3	5
2	0	2	15	0	F	28	1	C	41	2	9	54	3	6
3	0	3	16	1	0	29	1	D	42	2	A	55	3	7
4	0	4	17	1	1	30	1	E	43	2	B	56	3	8
5	0	5	18	1	2	31	1	F	44	2	C	57	3	9
6	0	6	19	1	3	32	2	0	45	2	D	58	3	A
7	0	7	20	1	4	33	2	1	46	2	E	59	3	B
8	0	8	21	1	5	34	2	2	47	2	F	60	3	C
9	0	9	22	1	6	35	2	3	48	3	0	61	3	D
10	0	A	23	1	7	36	2	4	49	3	1	62	3	E
11	0	B	24	1	8	37	2	5	50	3	2	63	3	F
12	0	C	25	1	9	38	2	6	51	3	3			

Example : Indoor unit address 15 : Set Rotary SW7 to "0" and SW6 to "F"



SW7 SW6

INSTALLATION

5-3-4. INFRARED ADDRESS SETTING

✳ A wireless remote controller (UTB- ✳VB) is required to set the infrared address setting.

✳ This function is available in all indoor unit with infrared signal receiver.

✳ Infrared address setting for duct type models can be made possible by using the optional IR receiver unit (UTB-✳WA).

Note : Since Beeping sound generate from indoor unit PCB installed far away (not from IR Receiver unit), sound might not be heard.

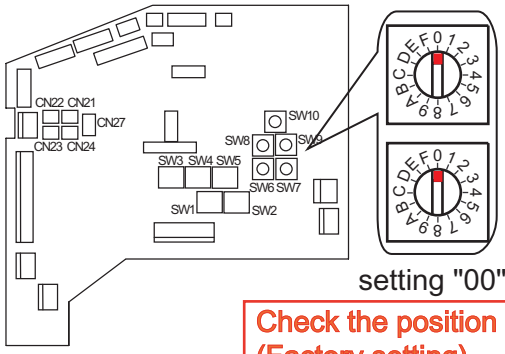
✳ The indoor unit's refrigerant circuit address and indoor unit address can be set using the infrared address setting.

✳ When remote controller address setting is required, set by the rotary switch on the indoor unit's PCB.

■ PREPARATION FOR INFRARED ADDRESS SETTING

(1) Set the switch on the indoor unit's PCB that is used for manual address setting is set to "00" at factory setting.

(This process is unnecessary for newly installed and not yet set the SW.)

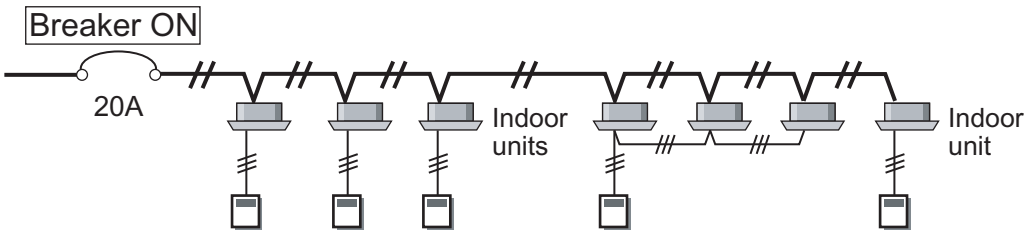


✳ If it is set to any other numbers, that setting value will be enabled.

(2) Turn on the power to the indoor unit.

✳ By turning on the power indoor units initializes EEV, so make sure the piping air-tight test and vacuuming have been conducted before turning on the power.

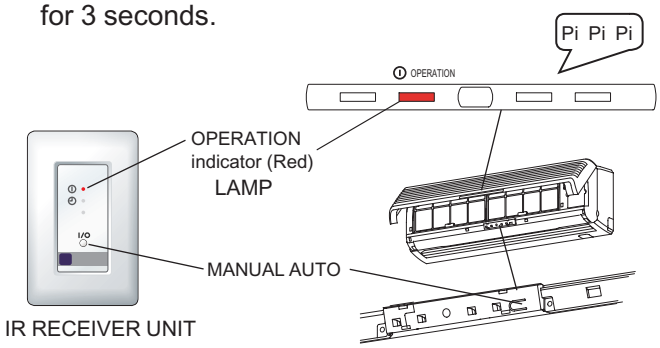
✳ Also check again to make sure no wiring mistakes were made before turning on the power.



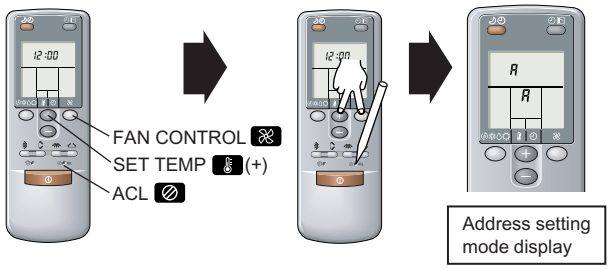
INSTALLATION

■ SWITCHING SELECTION OF ADDRESS SETTING MODE

(3) Press and hold the “MANUAL/AUTO” button for 3 seconds.



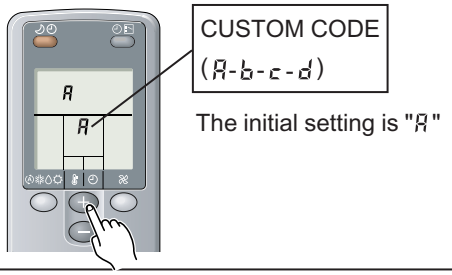
(4) Press and hold the “FAN CONTROL ” and the “+” buttons. Whilst holding these 2 buttons, press the "ACL" button.



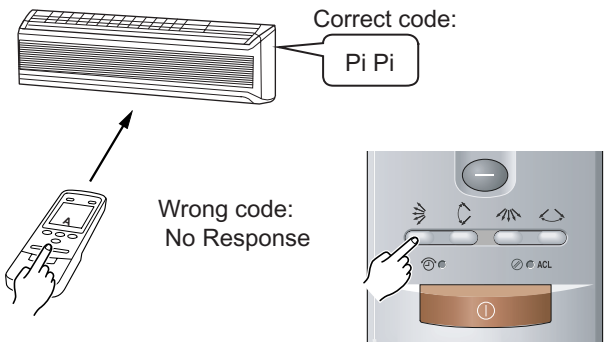
* The position of the “MANUAL/AUTO” button varies depending on the model. Refer to the operation manual for the position that is included with the unit.
* The error will be displayed by continuosly pressing the "MANUAL/AUTO" for 10 sec or more. In this case release the button or turn off the power.
* When the address has already been set in the circuit board, the operation LAMP will light up and the TIMER and SWING LAMPs will display the number of setting address.
* An explanation of the displayed information as shown below.
* As a Ceiling Wall type, LAMP color might be different.

■ SELECTION AND CONFIRMATION OF CUSTOM CODE

(5) Press the “+” or “-” buttons to select the custom code that matches the setting with the indoor unit. By selecting the appropriate custom code, the communication between the indoor unit and the wireless RC become possible.



(6) Press the “VERTICAL AIRFLOW ” button to send the code to the indoor unit.



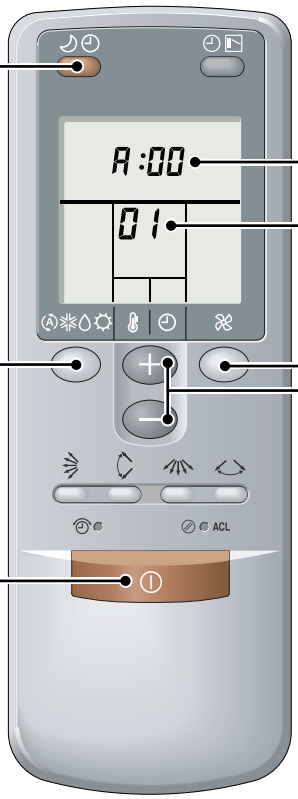
INSTALLATION

■ BUTTON NAME AND FUNCTION

✳ Refer to “5-3-2" for an outline of the address setting.

✳ It does not matter whether the refrigerant circuit address or indoor unit address is set first.
(The method shown here sets the indoor unit address first.)

✳ During address setting mode, indoor unit reject the any operation command from remote controller.



SLEEP button
Confirmation of address setting.

MASTER CONTROL button
- Start the address setting mode
- Changes the address display digits

START/STOP button
Transmits address setting

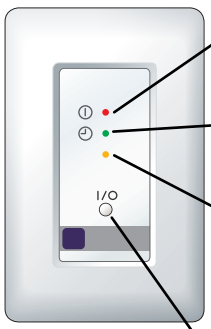
Address data
Address setting number
* Indoor unit address valid range 00-63
Refrigerant circut address valid range 00-99

Address code
01 --- Indoor unit address
02 --- Refrigerant circuit address

FAN MODE button
Switches between the address data (top line) and address code (bottom line)

"+" and "-" button
Increases and decreases the displayed number

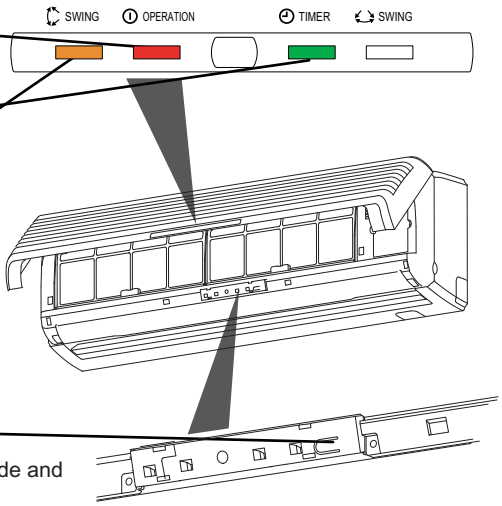
IR RECEIVER UNIT



OPERATION LAMP
Indication of address code

TIMER LAMP
Indication of address data number (1 degit)

SWING LAMP
Indication of address data number (10 degit)
* IR Reciver unit is not shown for swing mark



MANUAL/AUTO button
Long push ----- Switches between the address setting mode and (3 sec more) the address setting complete mode.
Short push ----- Switches the indicator display (between the indoor unit address and refrigerant circuit address)

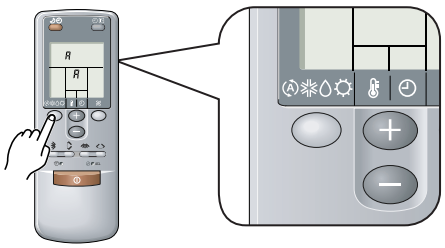
Note : Address code display is as follows (operation lamp display)

OPERATION LAMP	INDOOR UNIT ADDRESS DISPLAY	REFRIGERANT CIRCUIT ADDRESS DISPLAY
ADDRESS SETTING MODE	ON / OFF (Light continuously)	ON / OFF (Light 3 sec ON / 1 sec OFF)
ADDRESS SETTING COMPLETE MODE	ON / OFF (Light OFF)	ON / OFF (Light 0.5 sec ON / 0.5 sec OFF)

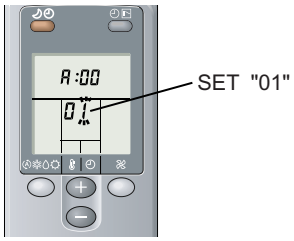
■ADDRESS SETTING

● INDOOR UNIT ADDRESS SETTING

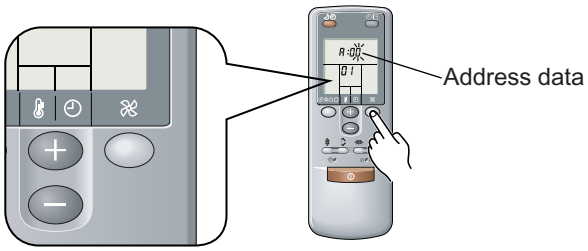
(7) Press the “MASTER CONTROL Ⓐ❋◊☼” button to access the address setting mode.



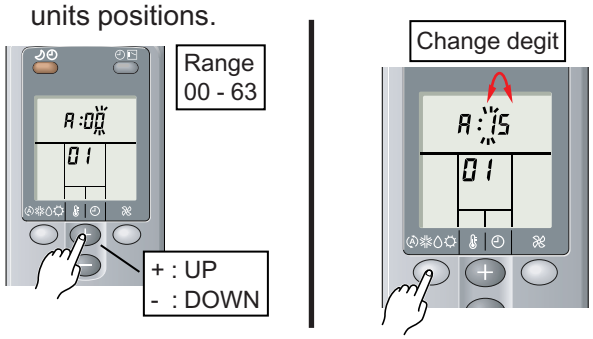
(8) Make sure the bottom number address code is ‘01’. If the number is other than ‘01’, press the “+” or the “-” buttons to alter.



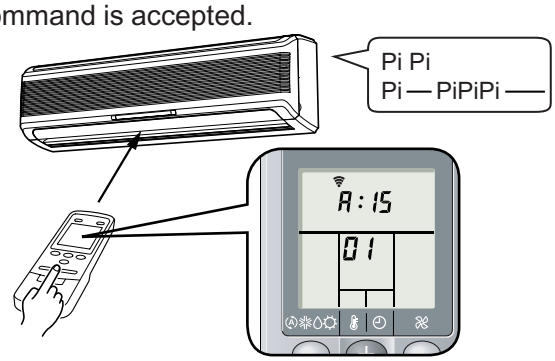
(9) Press the “FAN CONTROL ❋ ” button to access the address data setting mode. The address data will flash once this button is pressed.



(10) Press the “+” or the “-” buttons to adjust the address data. The indoor unit address range is between 00 and 63.
Each time the master control Ⓐ❋◊☼ button is pressed, it switches between 1 unit and 10 units positions.



(11) Press the “START/STOP ⏻” button once to send the information. A beeping noise will be heard if the command is accepted.

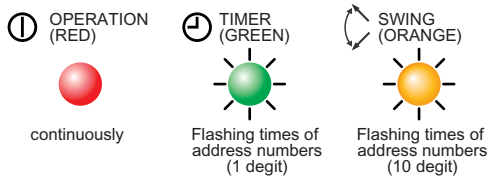


✱ In the following cases the setting signal is not read and a buzzer sounds.

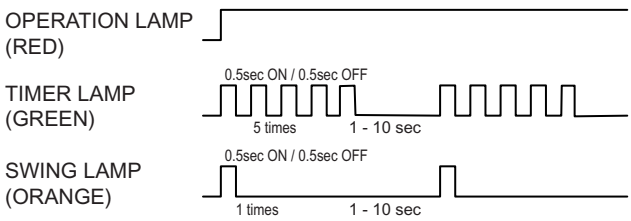
The indoor unit address No. is set out of range (64 or more) : Pi Pi Pi ———— (3 sec)

The setting of the rotary switch on the PCB is not "00" : Pi Pi Pi Pi Pi

(12) Indoor unit will display the indoor unit address data number on "TIMER ◴"(GREEN) and "SWING ⟳"(ORANGE) light.



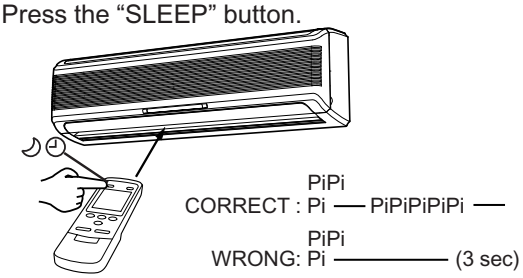
(Example) ADDRESS : 15



✱ ADDRESS 0 setting will not indicate TIMER LAMP.

● CHECK ADDRESS SETTING

(13) Press the “SLEEP” button.

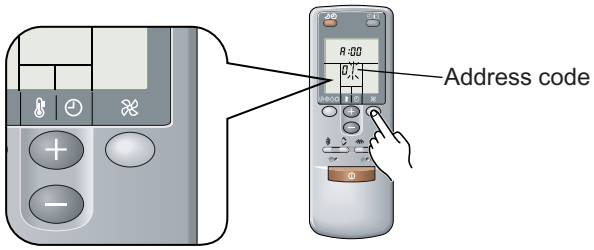


INSTALLATION

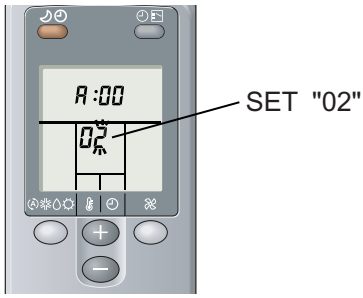
● REFRIGERANT CIRCUIT ADDRESS SETTING

Note : The refrigerant circuit address can also be set evenwhile above indoor unit address display.

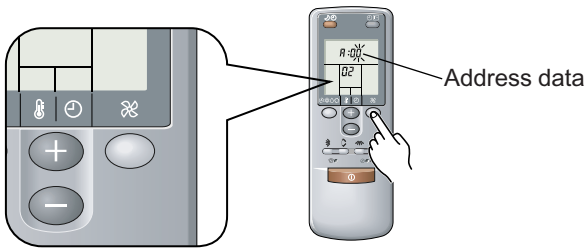
(14) Press the “FAN CONTROL ※ ” button to select the address code.



(15) Press the "+" or "-" button to adjust address code 02.

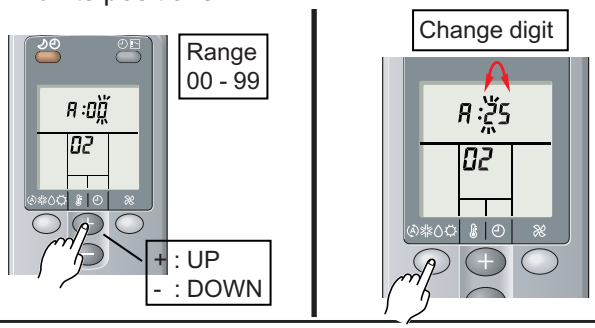


(16) Press the “FAN CONTROL ※ ” button to access the address data setting mode. The address data will flash once this button is pressed.

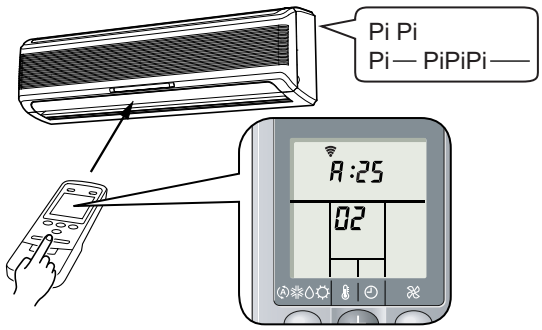


(17) Press the “+” or the “-” buttons to adjust the address data. The refrigerant circuit address range is between 00 and 99.

Each time the "master control Ⓐ❄◊☼" button is pressed, it switches between 1 unit and 10 units positions.



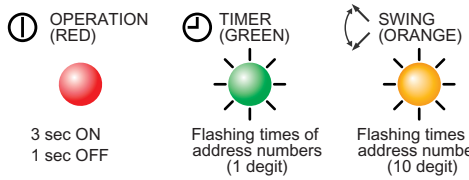
(18) Press the “START/STOP ⏻ ” button once to send the information. A beeping noise will be heard if the command is accepted.



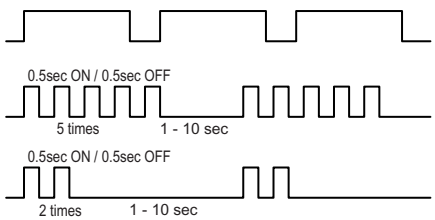
✱ In the following cases the setting signal is not read and a buzzer sounds.

The setting of the rotary switch on the PCB is not "00" : Pi Pi Pi Pi Pi

(19) Indoor unit will display the refrigerant circuit address data number on "TIMER ◴"(GREEN) and "SWING ⟳ "(ORANGE) light.



(Example) ADDRESS : 25

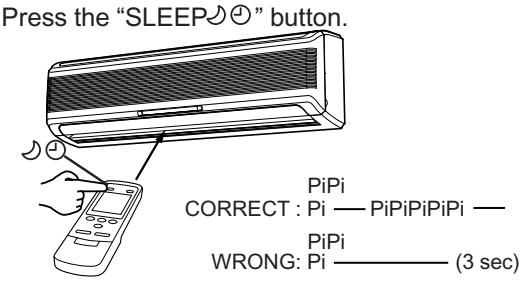


✱ ADDRESS 0 setting will not indicate TIMER LAMP and SWING LAMP.

✱ ADDRESS display will automatically switched from indoor unit address to refrigerant circuit address.

● CHECK ADDRESS SETTING

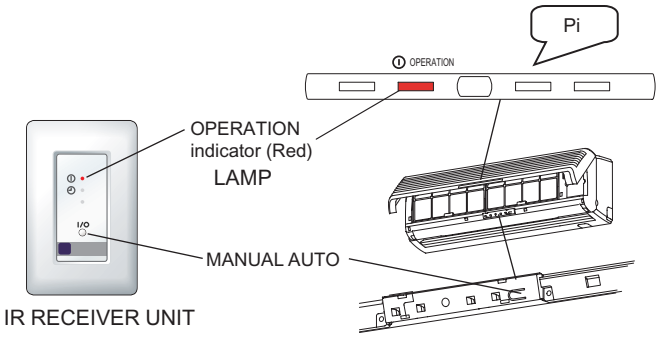
(20) Press the “SLEEP ☽◴ ” button.

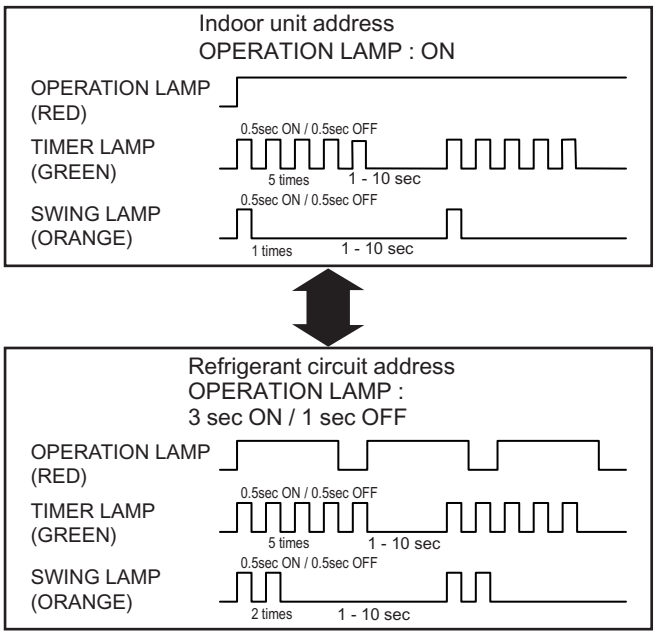


INSTALLATION

■ DISPLAY ADDRESS CODE SWITCHING

(21) Address display switches between indoor unit address and refrigerant circuit address by pressing "MANUAL/AUTO I/O " button once shortly.

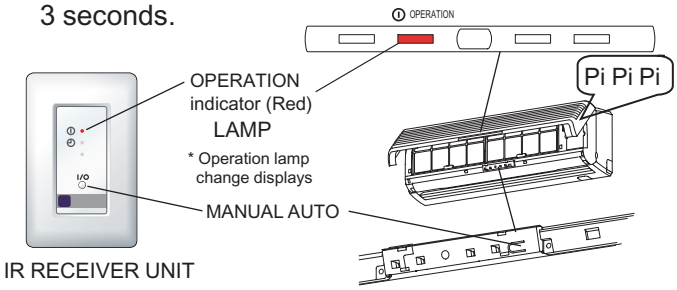




✱ Check to make sure the address setting is correct.

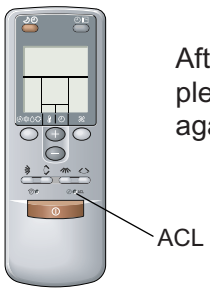
■ COMPLETION OF ADDRESS SETTING MODE

(22) Press and hold the "MANUAL/AUTO I/O" button for 3 seconds.



✱ Timer lamp keep blinks the number of times of address No.

(23) Press the "ACL" button.

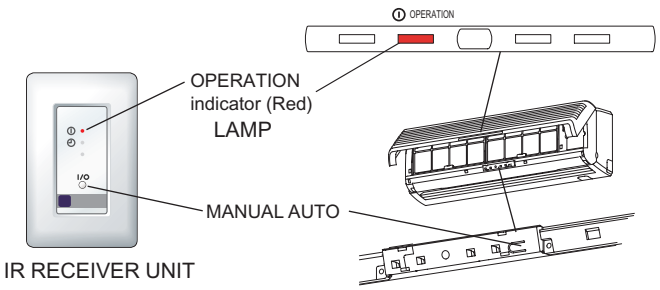


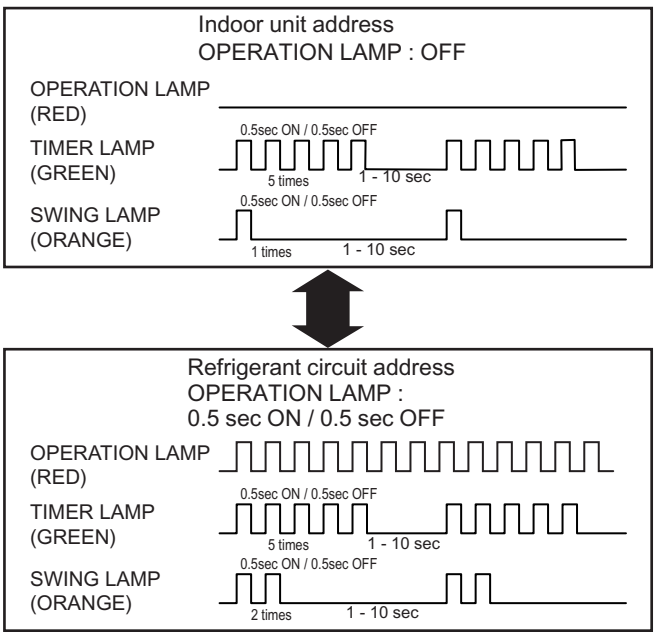
After pressing the ACL button, please set the custom code again if b,c,d setting.

✱ The address setting signal is not received afer switched address setting completion mode. (Pi Pi Pi Pi Pi)

✱ Press the "MANUAL/AUTO I/O " button again for 3 sec to return to if required to return the address setting mode.

(24) Press "MANUAL/AUTO I/O" button shortly to select the both address to be checked correct setting

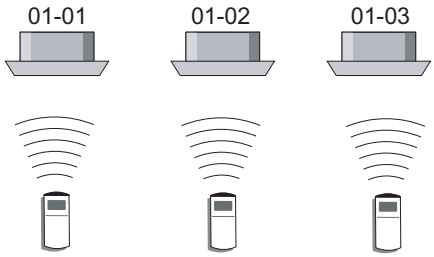




✱ Check to make sure the address setting is correct.

INSTALLATION

■ SETTING UP EACH INDOOR UNIT



Repeat steps (1) through to (24). Steps (1) through to (6) and (21) to (24) only need to carried out if the custom code is different to the factory setting of “A”.

■ RESET THE POWER AFTER SETTING UP ADDRESS OF ALL INDOOR UNITS

Important

⁕ If the reset is not performed, address can not be read in normally.

⁕ After all the addresses have been set, the circuit breaker needs to be switched off for at least 2 minutes.
After the 2 minutes has passed, power can be restored.

⁕ The set address is stored in the PCB and will remain in memory even when the power is turned off.
However setting address is effective after power reset.
Record the address set in the indoor unit on a label, etc., and affix the label to the unit so it can be used for after-sales service operations.

⁕ Address 0 setting will not indicate TIMER LAMP and SWING LAMP.

⁕ Once the "ACL" button is pressed on the remote controller, the MASTER CONTROL will be set in the "AUTO MODE".
Please adjust the MASTER CONTROL to either "COOLING" or "HEATING" before trying to operate the air conditioner.

⁕ Note : If CUSTOM CODE is set to anything other than "A" ,the remote control must be set accordingly to the INDOOR UNIT setting.

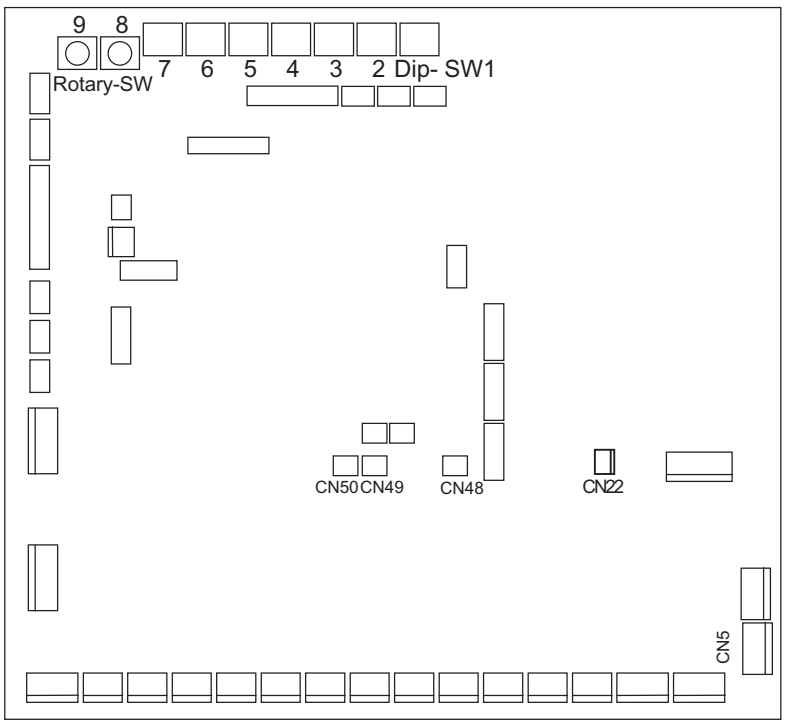
INSTALLATION

5-4. FUNCTION SETTING
5-4-1. OUTDOOR UNIT

Outdoor unit			
DIP SW	SW 1	1	Test run(Cooling)
		2	Test run(Heating)
		3	Pump down operation
		4	Forced defrost operation
	SW 2	1	Silent operation fan mode
		2	Snow falling protection fan mode
		3	EEV initialize
		4	Forced oil recovery operation
	SW 3	1	Forbidden
		2	Forbidden
		3	Forbidden
		4	Forbidden
	SW 4	1	Forbidden
		2	Forbidden
		3	Forbidden
		4	Forbidden
	SW 5	1	Forbidden
		2	Forbidden
		3	Base heater validity / invalidity
		4	Forbidden
	SW 6	1	Forbidden
		2	Forbidden
		3	Forbidden
		4	Forbidden
	SW 7	1	System type switch 1
		2	System type switch 2
		3	Forbidden
		4	Forbidden
ROTARY SW	SW 8		Refrigeration circuit address 1
	SW 9		Refrigeration circuit address 2

■ SWITCH POSITION

● Outdoor unit control circuit board



INSTALLATION

■ DIP SWITCH SETTING

(1) SW1 setting

1-1 Test run (cooling & Heating)

All the indoor units connected to the outdoor unit can be test-operated by DIP switch setting.

SELECTOR SWITCH FOR TEST RUN AND NORMAL OPERATION (◆ ▪ ▪ ▪ Factory setting)

	SW1-1	SW1-2	Test Run	Remarks
◆	OFF	OFF	Normal operation	
	ON	OFF	Cooling test run	(OFF-ON) and (operated continuously more than 1 min. with ON state)
	OFF	ON	Heating test run	Same as above
	ON	ON	Normal operation	

(when release ON → OFF)

1-2 Pump down operation

Pump down operation is set with SW1- 3

PUMP DOWN OPERATION (◆ ▪ ▪ ▪ Factory setting)

	SW1-3	Pump down operation	Remarks
◆	OFF	Release	
	ON	Operate	(OFF-ON) and (operated continuously more than 30 sec. with ON state)

1-3 Forced defrost operation

Forced oil recovery operation is set with SW1- 4

FORCED DEFROST OPERATION (◆ ▪ ▪ ▪ Factory setting)

	SW1-4	Forced defrost	Remarks
◆	OFF	Release	
	ON	Operate	(OFF-ON) and (operated continuously more than 30 sec. with ON state)

(2) SW2 setting

2-1 Silent operation mode

For a reduction of noise level at night, the operating mode of the outdoor unit can be switched. (In the cooling mode only.)

SILENT OPERATION MODE (◆ ▪ ▪ ▪ Factory setting)

	SW 2-1	Silent operation mode
◆	OFF	Release
	ON	Operate

2-2 Snow falling protection fan mode

When snowing , to prevent the unit from being covered with snow, the outdoor fan is periodically operated by this switch even when the compressor is stopped.

SNOW FALLING PROTECTION FAN MODE (◆ ▪ ▪ ▪ Factory setting)

	SW2-2	Snow falling protection fan mode
◆	OFF	Release
	ON	Operate

INSTALLATION

2-3 Expansion valve initialize

This switch initializes the number of pulses of the expansion valve when the outdoor unit is stopped.

ELECTRONIC EXPANSION VALVE INITIALIZATION

(◆ ▪ ▪ ▪ Factory setting)

	DIP SW2-3	Initialization
◆	OFF	Release
	ON	Operate

2-4 Forced oil recoverry operation.

Oil recovery is started manually by DIP SW 2-4 on the PCB.

FORCED OIL RECOVERY

(◆ ▪ ▪ ▪ Factory setting)

	DIP SW2-4	Forced oil recovery
◆	OFF	Release
	ON	Operate

INSTALLATION

(3). SW3 setting

Dip SW3-1,3-2,3-3,3-4 setting forbidden.

(4).SW4 setting

Dip SW4-1,4-2,4-3,4-4 setting forbidden.

(5). SW5 setting

5-1 Dip SW 5-1,5-2,5-4 setting forbidden

5-2 Base heater validity/invalidity

This switch sets the output of the base heater (CN5) on the PCB.

BASE HEATER SWITCH

(◆ ▪ ▪ ▪ Factory setting)

	DIP SW5-3	Base heater
◆	OFF	Invalidity
	ON	validity

The base heater output turns ON at an outside temperature of 2˚C or less and during heating operation.
Base heater : available in the field 220-240V AC , 35W

(6) SW6 setting

DIP SW 6-1,6-2,6-3 and 6-4 setting forbidden

DIP SW6-1	OFF
DIP SW6-2	OFF
DIP SW6-3	OFF
DIP SW6-4	OFF

(7) SW7 setting (Never change at the site)

7-1 System type switch

The outdoor unit model can be selected by setting DIP switches 7-2 and 7-1 on the PCB.

OUTDOOR UNIT TYPE SELECTION (◆ · · · Factory setting)

	SW7-1	SW7-2	Type selection
	OFF	OFF	Forbidden
	ON	OFF	Forbidden
◆	OFF	ON	Heat recovery
	ON	ON	Forbidden

7-2 Dip SW 7-3 & 7-4 setting forbidden

DIP SW7-3	OFF
DIP SW7-4	OFF

■ ROTARY SWITCH SETTING

SW8,9 setting

Rotary SW	Description	Remarks
8	Refrigerant circuit address SW 1	Refrigerant circuit address (the first digit)
9	Refrigerant circuit address SW 2	Refrigerant circuit address (the second digit)

■ EXTERNAL INPUT AND OUTPUT

Connector	Output
CN48	Error Display (DC12V)

INSTALLATION

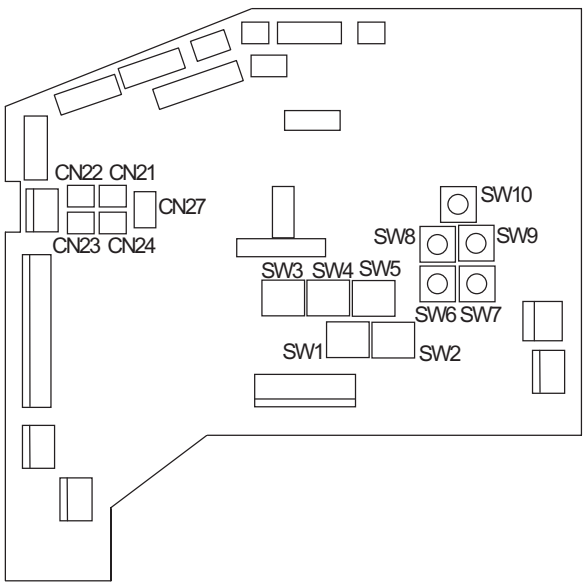
5-4-2. INDOOR UNIT

■ MODELS : AUXB, AU∗A, ARXB, ARXA, ARXC, AB∗A, AS∗A18-30, AW∗A

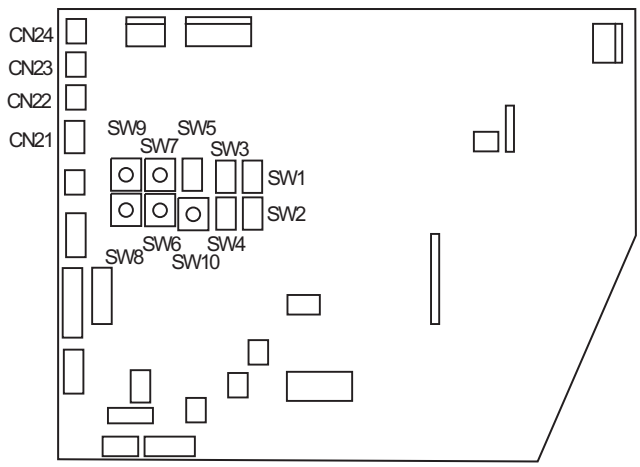
DIP-SW	SW 1	1	Forbidden
		2	Forbidden
		3	Room temp correct coefficient of heating 1
		4	Room temp correct coefficient of heating 2
	SW 2	1	Room temp correct coefficient of cooling
		2	Forbidden
		3	Refrigerant type
		4	Auto restart validity / invalidity
	SW 3	1	Forbidden (Indoor unit fan speed switch 1)
		2	Forbidden (Indoor unit fan speed switch 2)
		3	Forbidden (Indoor unit fan speed switch 3)
		4	External input select edge / pulse
	SW 4	1	Forbidden (Indoor unit model code)
		2	Forbidden (Indoor unit model code)
		3	Forbidden (Indoor unit model code)
		4	Forbidden (Indoor unit model code)
	SW 5	1	Wireless remote controller custom code switch 1
		2	Wireless remote controller custom code switch 2
		3	Outdoor unit series setting
		4	Draft prevention setting switch
Rotary SW	SW 6		Indoor unit address switch 1
	SW 7		Indoor unit address switch 2
	SW 8		Refrigerant circuit address switch 1
	SW 9		Refrigerant circuit address switch 2
	SW 10		Remote controller address switch

■ SWITCH POSITION

AUXB, AU∗A, ARXB, ARXA, AB∗A



AS∗A18-30, AW∗A



INSTALLATION

■DIP SWITCH SETTING

● SW1 setting

＊DIP-SW1-1, SW1-2 setting forbidden

◆	SW1-1	OFF
◆	SW1-2	OFF

＊Room temperature correct coefficient of heating.

Set the heating correct coefficient value for setting temperature. Indoor unit will be continued to operate until reaching to "Set Temperature" + "Coeffecient value".
It takes effect for mounting the unit at higher position in order to correct the temperature difference between floor and ceiling side.

HEATING TEMPERATURE CORRECTION (◆ ･ ･ ･Factory setting)

	SW1-3	SW1-4	Coefficient value
◆	OFF	OFF	+ 4 deg
	ON	OFF	+ 8 deg
	OFF	ON	0 deg
	ON	ON	- 2 deg

● SW2 setting

＊Room temperature correct coefficient of cooling.

Set the cooling correct coefficient value for setting temperature. Indoor unit will be continued to operate until reaching to "Set Temperature" + "Coeffecient value".
It takes effect for mounting the unit on floor position in order to correct the temperature defference between human around and floor side.

COOLING TEMPERATURE CORRECTION (◆ ･ ･ ･Factory setting)

	SW2-1	Coefficient value
◆	OFF	0 deg
	ON	+ 2 deg

INSTALLATION

＊DIP-SW2-2 setting forbidden

◆	SW2-2	OFF

＊Refrigerant type

Selecting refrigerant type

REFRIGERNT TYPE (◆ ･ ･ ･Factory setting)

	SW2-3	Refrigerant type
◆	OFF	R410A / R22
＊1	ON	R407C

＊1 : Set to ON for connecting R407C outdoor unit.

＊Auto restart validity / invalidity ＊2

Auto restart function can be selected by turning this switch ON / OFF.

AUTO RESTART SETTING (◆ ･ ･ ･Factory setting)

	SW2-4	Auto restart
◆	OFF	Invalidity
	ON	Validity

＊2 : Auto restart is an emergency function such as for power failure etc.
Do not start and stop the equipment by this function in normal operation.
Be sure to operate by the control unit, converter or external input equipment.

● SW3 setting (Never change at the site)

Indoor unit fan speed switch

This switch can select fan speed corresponding to each model.

✳ Compact Cassette Type

	AUXB07	AUXB09	AUXB12	AUXB14	AUXB18
SW 3-1	OFF	OFF	OFF	OFF	OFF
SW 3-2	OFF	OFF	OFF	OFF	OFF
SW 3-3	OFF	OFF	OFF	OFF	OFF

✳ Cassette Type

	AU*A20	AU*A25	AU*A30	AU*A36	AU*A45	AU*A54
SW 3-1	ON	OFF	OFF	OFF	ON	OFF
SW 3-2	ON	ON	OFF	ON	OFF	OFF
SW 3-3	ON	ON	ON	OFF	OFF	OFF

✳ Compact Duct Type

	ARXB07	ARXB09	ARXB12	ARXB14	ARXB18
SW 3-1	OFF	OFF	OFF	OFF	OFF
SW 3-2	OFF	OFF	OFF	OFF	OFF
SW 3-3	OFF	OFF	OFF	OFF	OFF

Please refer for static pressure setting 5-4-8

✳ Duct Type , Low Static Pressure Duct type

	ARXB25 ARXA25	ARXB30 ARXA30	ARXB36 ARXA36	ARXB45 ARXA45
SW 3-1	OFF	OFF	OFF	OFF
SW 3-2	OFF	OFF	OFF	OFF
SW 3-3	OFF	OFF	OFF	OFF

Please refer for static pressure setting 5-4-8 (for ARXB)

✳ High Static Pressure Duct type

	ARXC36	ARXC45	ARXC60
SW 3-1	OFF	OFF	OFF
SW 3-2	OFF	OFF	OFF
SW 3-3	OFF	OFF	OFF

✳ Floor Ceiling Type

	AB*A12	AB*A14	AB*A18
SW 3-1	OFF	OFF	OFF
SW 3-2	OFF	OFF	OFF
SW 3-3	OFF	OFF	OFF

✳ Ceiling Type

	AB*A30	AB*A36	AB*A45	AB*A54
SW 3-1	OFF	OFF	OFF	OFF
SW 3-2	OFF	ON	OFF	ON
SW 3-3	OFF	OFF	ON	ON

✳ Wall mounted Type

	AS*A18	AS*A24	AS*A30
SW 3-1	OFF	OFF	ON
SW 3-2	OFF	ON	ON
SW 3-3	ON	ON	ON

✳ Ceiling Wall Type

	AW*A07	AW*A09	AW*A12	AW*A14	AW*A18	AW*A24	AW*A30
SW 3-1	OFF	ON	OFF	ON	OFF	OFF	ON
SW 3-2	OFF	OFF	ON	ON	OFF	ON	ON
SW 3-3	OFF	OFF	OFF	OFF	ON	ON	ON

INSTALLATION

✳External input select edge / pulse

This switch is used to select the format of external input command as shown in the table below.

(◆ ▪ ▪ ▪Factory setting)

	SW3-4	External input select
◆	OFF	Edge
	ON	Pulse

●SW4 setting (Never change at the site)

✳Indoor unit model code

This switch for changing the model code information of indoor unit PCB.

INDOOR UNIT MODEL CODE

	7	9	12	14	18	20	25(24)	30	36	45	54	60
SW 4-1	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
SW 4-2	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON
SW 4-3	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	OFF	OFF	OFF
SW 4-4	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON

●SW5 setting

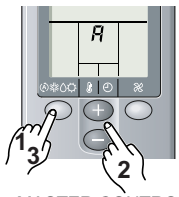
✳Wireless remote controller custom code switch

Decide the custom code and restrict the type of infrared control signal, in order to prevent mixing of multiple indoor unit signals.

Remote controller custom code switch

(◆ ▪ ▪ ▪Factory setting)

	SW5-1	SW5-2	Custom code
◆	OFF	OFF	Type A
	ON	OFF	Type B
	OFF	ON	Type C
	ON	ON	Type D



1. Press the MASTER CONTROL button for more than five seconds to start the code change.
2. Press the (+) or (-) button to select the desired code. → A → B → C → D
3. Press the MASTER CONTROL button again to end the code change.

Remote controller

✳Connected outdoor unit series

Selecting outdoor unit series.

(◆ ▪ ▪ ▪Factory setting)

	SW5-3	Outdoor unit series
◆	OFF	VRF V series
✳2	ON	VRF S series

✳2 : Set to ON for connecting S series outdoor unit.

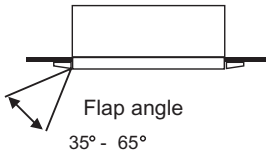
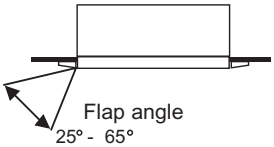
✳Draft prevention setting switch (only for cassette type)

Set the flap angle of cassette type unit.

Draft prevention switch

(◆ ▪ ▪ ▪Factory setting)

	SW5-4	flap angle
◆	OFF	Normal position
	ON	Draft prevention position

Normal position	Draft prevention position
	

An air flow direction, by moving the flap angle horizontally, It can prevent that a cold wind directly hits.

*If air conditioning cooling operation is performed in long time and a humid place, there is a possibility that waterdrop may hang down from a blow-off mouth.

INSTALLATION

■ROTARY SWITCH SETTING

● SW6,7 setting

✳ Indoor unit address switch

Sets the indoor unit addresses.
Please see "5-3-3 address setting" for type A indoor unit address conversion table.

INDOOR UNIT ADDRESS SWITCH (Factory setting SW 6: 0 SW 7: 0)

Rotary SW	Description	Remarks
6	Indoor unit address SW 1	Indoor unit address (the first digit)
7	Indoor unit address SW 2	Indoor unit address (the second digit)

● SW8,9 setting

✳ Refrigerant circuit address switch

Sets the refrigerant circuit address.
Please see "5-3-3 address setting" for type A refrigerant circuit address conversion table.

REFRIGERANT CIRCUIT ADDRESS SWITCH (Factory setting SW 8: 0 SW 9: 0)

Rotary SW	Description	Remarks
8	Refrigerant circuit address SW 1	Refrigerant circuit address (the first digit)
9	Refrigerant circuit address SW 2	Refrigerant circuit address (the second digit)

● SW10 setting

✳ Remote controller address switch

When the indoor unit is wired by remote controller group, to identity the indoor unit in the remote controller group, the number (remote controller address) in the remote controller group is set.
Set the remote controller address in the 0.1.2,~,15 order (Blank is not allowed)

REMOTE CONTROLLER ADDRESS SWITCH (Factory setting : 0)

Rotary SW	Description	Remarks
10	Remote controller address	Remote controller address

■EXTERNAL INPUT AND OUTPUT

Connector	Indoor unit type	Input	Output	Remarks
CN21	Wall mounted / Ceiling wall types	CONTROL INPUT (OPERATION / STOP)	——	See 5-5-2 for details
CN27	Other types			
CN22	All types	——	OPERATION DISPLAY (DC12V)	
CN23			ERROR DISPLAY (DC12V)	
CN24			INDOOR UNIT FAN STATUS DISPLY(DC12V)	

INSTALLATION

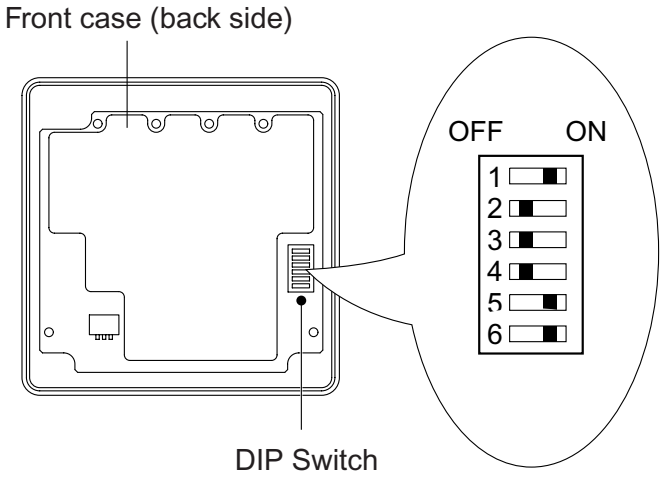
5-4-3. WIRED, SIMPLE REMOTE CONTROLLER

Wired, simple remote controller		
DIP SW	1	Dual remote controller setting
	2	
	3	Group control setting
	4	Model setting
	5	Auto changeover setting
	6	Memory backup setting (Wired remote controller only)

■ SWITCH POSITION

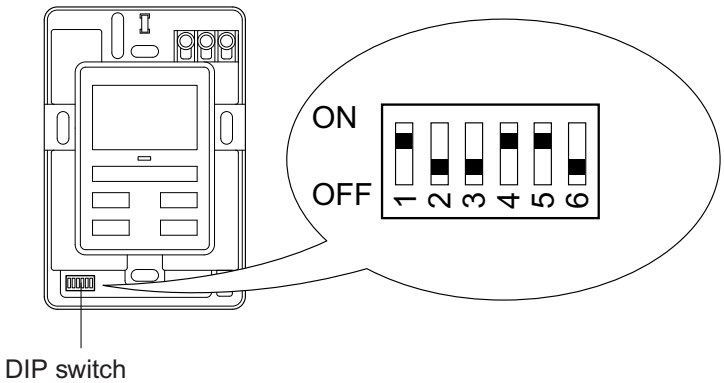
• Wired remote controller

MODEL : UTB - ∗UB

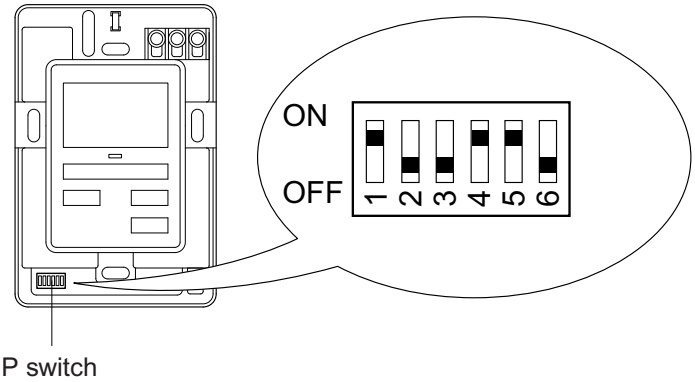


• Simple remote controller

MODEL : UTB - ∗PB



MODEL : UTB - ∗RA



INSTALLATION

■ DIP SWITCH SETTING

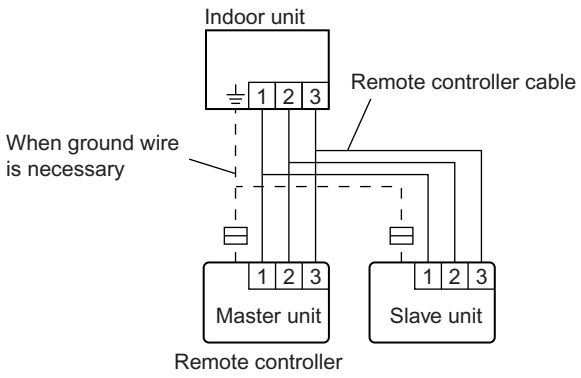
● SW1 setting

✳ Dual remote controller setting

Set the remote controller DIP switch No.1 and 2 according to the following table.

(◆ ▪ ▪ ▪Factory setting)

	Number of remote controller	Master unit		Slave unit	
		DIP-SW No.1	DIP-SW No.2	DIP-SW No.1	DIP-SW No.2
◆	1 (Normal)	ON	OFF	—	—
	2 (Dual)	OFF	OFF	ON	ON

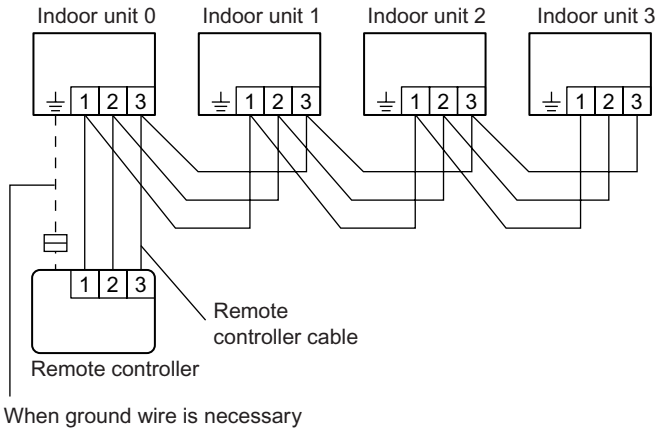


✳ Group control setting

Number of indoor unit connection (One/Multiple)
This is switched according to the number of connected indoor units.

(◆ ▪ ▪ ▪Factory setting)

	DIP-SW No.3	Number of indoor unit
◆	OFF	One unit connection
	ON	Multiple unit connection



✳ Model setting

The system type of the outdoor unit can be selected by setting up DIP switch No.4 as follows.

(◆ ▪ ▪ ▪Factory setting)

	DIP-SW No.4	Model
◆	OFF	Heat Pump model or Heat Recovery model
	ON	Cooling only model

Do not forget to set to ON when system uses for cooling only.

INSTALLATION

✳ Auto changeover setting

Selecting auto changeover validity / invalidity.
Set to ON for AIRSTAGE ™(VRF system) Heat Recovery models.

(◆ ▪ ▪ ▪Factory setting)

	DIP-SW No.5	Auto changeover
	OFF	Invalidity
◆	ON	Validity

✳ Memory backup setting (Wired remote controller only)

Set to ON to use batteries for thr memory backup.
If batteries are not used, all of the settings stored
in memory will be deleted if there is a power failure.

(◆ ▪ ▪ ▪Factory setting)

	DIP-SW No.6	Memory backup
◆	OFF	Invalidity
	ON	Validity

Never turn it ON in the case of simple remote controller.

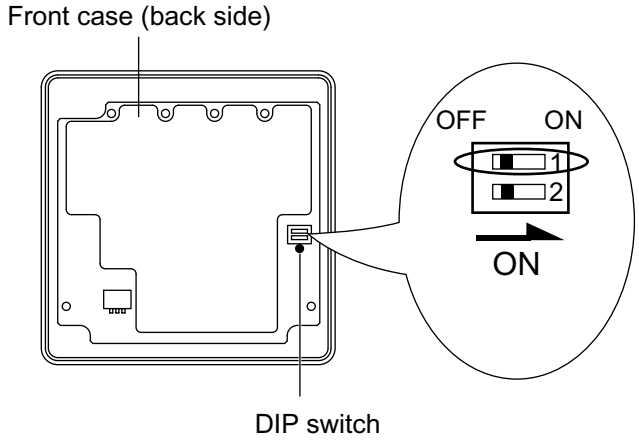
INSTALLATION

5-4-4. GROUP REMOTE CONTROLLER

Group remote controller		
DIP SW	1	Memory backup setting
	2	Forbidden

■ SWITCH POSITION

● Group remote controller



INSTALLATION

■ DIP SWITCH SETTING

● SW1 setting

∗ Set SW1 to ON to enable the memory backup.

If there is a power failure when the memory backup is enabled, the setting stored in the memory will be saved.

(◆ . . . Factory setting)

	SW1	Memory backup
◆	OFF	Invalidity
	ON	Validity

●SW2 setting : Forbidden

(◆ . . . Factory setting)

	SW2	OFF
◆		

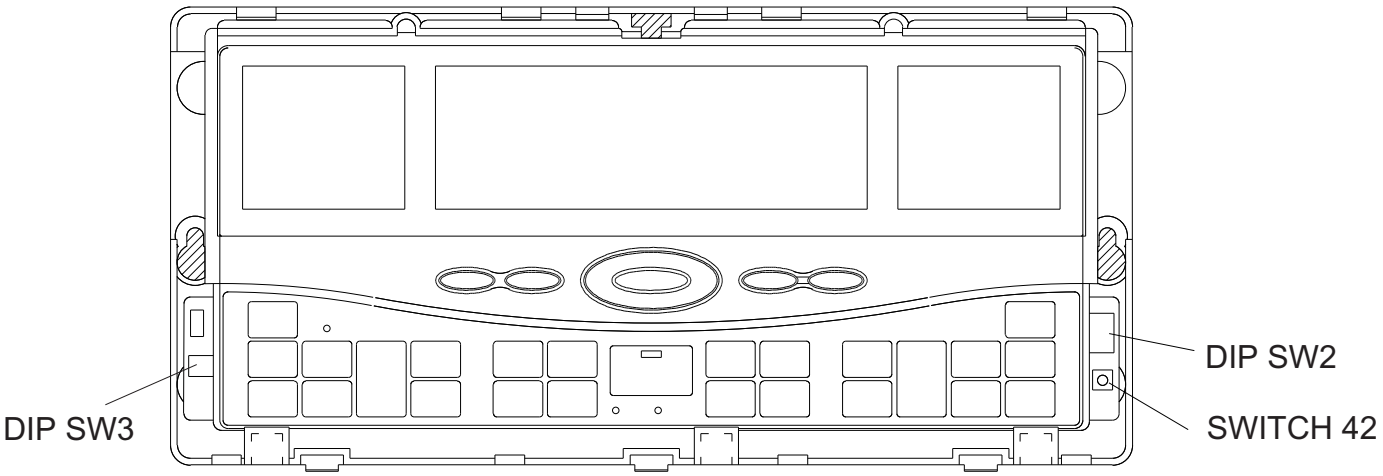
5-4-5. CENTRAL REMOTE CONTROLLER

Central remote controller			
DIP-SW	SW 2	1	External Input validity / invalidity
		2	External Input select Edge / pulse
		3	Filter sign indication ON / OFF
		4	°C / °F switch
		5	RC operation prohibit function validity / invalidity
		6	Forbidden
		7	Forbidden
		8	SRAM battery ON / OFF
	SW 3	1	Forbidden
		2	Forbidden
		3	Forbidden
		4	Forbidden
	SW 42		Initial setting

INSTALLATION

■ SWITCH POSITION

● Central remote controller



■DIP SWITCH SETTING

●SW2 SETTING

✳ External input validity / invalidity

For validity / invalidity the external input function.

(◆ - - -Factory setting)

	SW2-1	External input function
◆	OFF	Invalidity
	ON	Validity

✳ External input select edge / pulse

Select the external input command function.

(◆ - - -Factory setting)

	SW2-2	External input select
◆	OFF	Edge
	ON	Pulse

(Refer to 5-4-2 and 5-4-3 external input & output)

✳ Filter sign indication ON / OFF

Filter check sign indication or not when filter check signal come from indoor unit.

(◆ - - -Factory setting)

	SW2-3	Filter check sign indication
◆	OFF	Non-Display
	ON	Display

✳ ˚C / ˚F switch

Temperature display is centigrade(℃) / Fahrenheit(℉)

(◆ - - -Factory setting)

	SW2-4	˚C /˚F
◆	OFF	˚C
	ON	˚F

✳ RC operation prohibit function validity / invalidity

For validity / invalidity the wired ,simple and wireless remote controller operation prohibit function.

(◆ - - - Factory setting)

	SW2-5	RC operation prohibit function
◆	OFF	Validity
	ON	Invalidity

INSTALLATION

✳ SW2-6 2-7 setting forbidden.

SW 2-6	OFF
SW 2-7	OFF

✳ SRAM battery ON / OFF

When installing the central remote controller, this switch must be set to ON.
(factory setting : OFF)

(◆ · · · Factory setting)

	SW2-8	SRAM Battery
◆	OFF	OFF
	ON	ON

At the time of shipment, the battery is turned off to avoid electricity consumption.
Be sure to set this switch to ON.

✳ SW42 Initial setting button

This switch is used when initializing the central remote controller.

INSTALLATION

5-4-6. DUCT STATIC PRESSURE SETTING

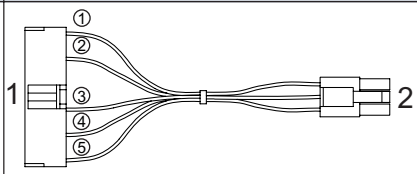
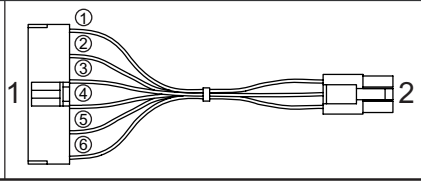
■MODELS : ARXB07, ARXB09, ARXB12, ARXB14, ARXB18

Change a setting of air flow, when external static pressure is more than 25 Pa.

A setting of air flow can be changed by exchanging wires for B type from A type. (Refer to following table)

How to set air flow

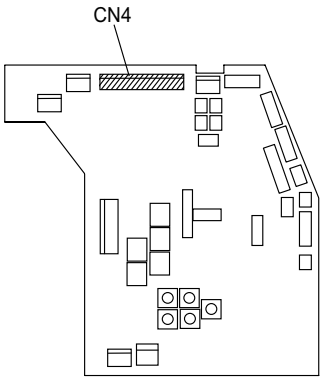
(1) Connect "1" of "B type" wire to "CN4" on circuit board and "2" to the connector connected to the fan motor.

TYPE	EXTERNAL STATIC PRESSURE	WIRE	REMARK
A	0 - 25 Pa	 ① BLUE ② VIOLET ③ PINK ④ WHITE ⑤ BLACK	Factory setting (Standard static pressure)
B	25 - 50 Pa	 ① VIOLET ② PINK ③ BLUE ④ RED ⑤ WHITE ⑥ BLACK	Standard parts (High static pressure)

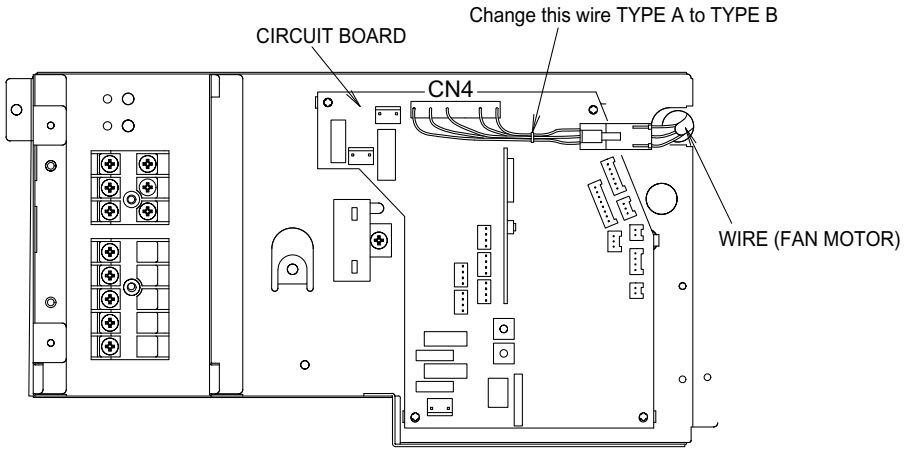
INSTALLATION

INSTALLATION

● Layout of circuit board



● Layout of control box



Be sure to connect the wire with connector.
If connection is improper, it will not operate properly.

■MODELS : ARXB25, ARXB30, ARXB36, ARXB45

Change a setting of air flow, when external static pressure is more than 40 Pa.

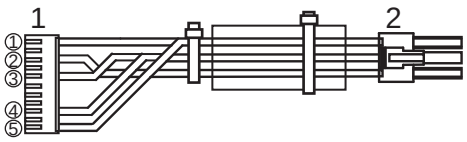
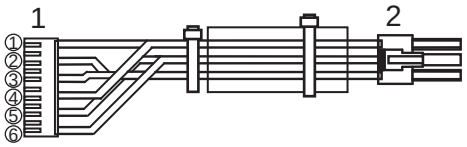
A setting of air flow can be changed by exchanging wires for B type from A type.(Refer to following table)

How to set air flow

(1) Cut a binder not to damage wires and remove "A type " wire.

(2) Connect "1" of "b type" wire to "CN4" on circuit board and "2" to the connector connected to the fan motor.

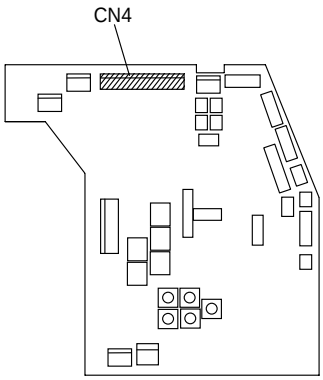
(3) Bind with the binder (small) of accessory together with *three wires bound first.
*AR25:two wires

TYPE	EXTERNAL STATIC PRESSURE	WIRE	REMARK
A	0 - 40 Pa	 ① BLACK ② WHITE ③ PINK ④ PURPLE ⑤ BLUE	Factory setting (Standard static pressure)
B	40 - 80 Pa	 ① BLACK ② WHITE ③ RED ④ BLUE ⑤ PINK ⑥ PURPLE	Standard parts (High static pressure)

INSTALLATION

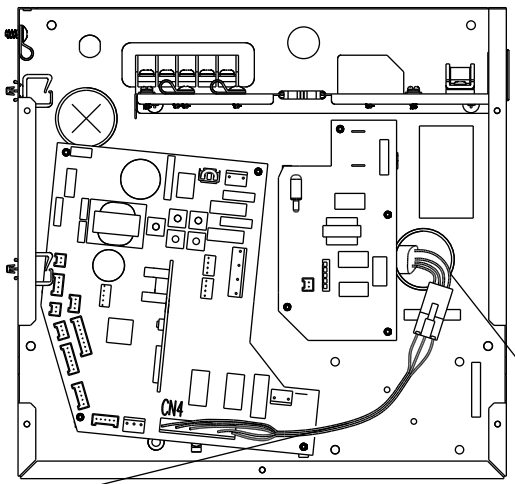
INSTALLATION

● Layout of circuit board



●Layout of control box

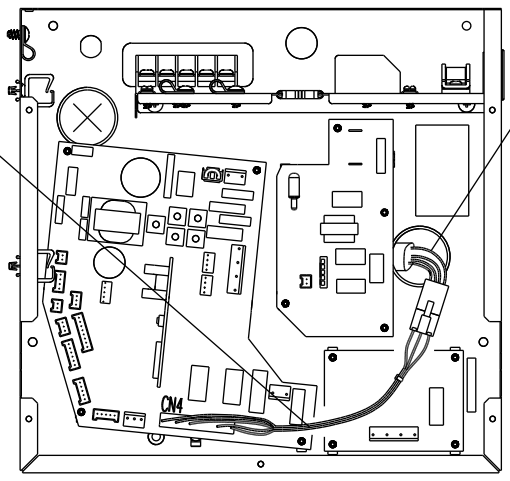
MODEL : ARXB25



WIRE (FAN MOTOR)

MODELS : ARXB30, ARXB36, ARXB45

Change this wire TYPE A to TYPE B



Be sure to connect the wire with connector.
If connection is improper, it will not operate properly.

5-5. EXTERNAL INPUT & OUTPUT

5-5-1. OUTDOOR UNIT

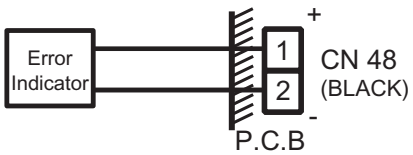
(1) Input

Not use

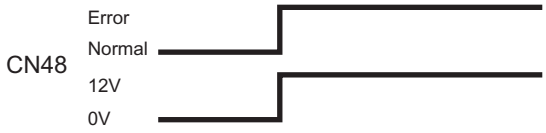
(2) Output

① Error display

This output indicates the outdoor unit and connected indoor unit's "Normal" or "Error" status.

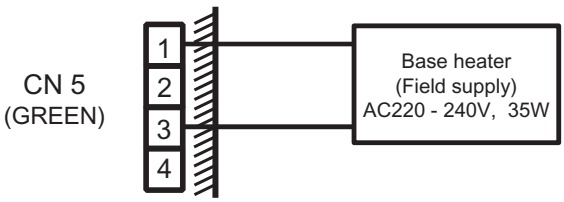


CONNECTOR	OUTPUT VOLTAGE	STATUS
CN48 (BLACK)	0V	Normal
	12V	Error



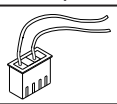
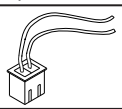
② Base heater output

Turn ON when the ambient temperature is low in heating mode.(2℃ or less)



(3) Parts

Following cord (service parts) is required. Please use the parts number shown below to order the cord from your sales representative.

Name and shapes	Q'ty	Parts No.
BASE HEATER WIRE 	1	9368776008
EXTERNAL INPUT WIRE 	1	9368777005

INSTALLATION

5-5-2. INDOOR UNIT

■ CONTROL INPUT (Operation / Stop)

Indoor unit can be operated or stopped by using indoor unit PCB
CN 21 (Wall mounted type / ceiling wall type) or CN27 (other types)

- Open circuit voltage : ≦ 5.25 (V).
- Short circuit current : ≦ 0.6 (mA).
- Short circuit detection resistance (R_{ON}) : ≦ 500 (ohm).
- Open circuit detection resistance (R_{OFF}) : ≧ 100 (kilo-ohm).

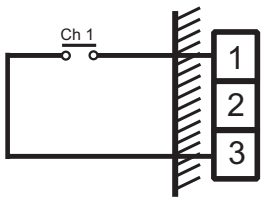
A twisted pair cable(22AWG) shoud be used. Maximum length of cable is 25m.

● Input select

Dip SW3-4	Input select
OFF	Edge
ON	Pulse

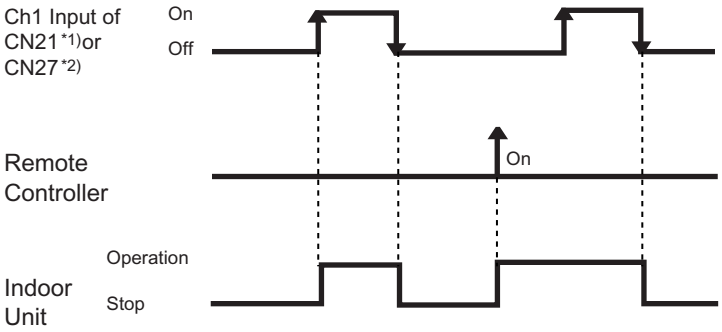
● In the case of "Edge" input

CONNECTOR	INPUT SIGNAL	COMMAND
Ch1 of CN21*1) (RED) or CN27*2)(RED)	OFF ⟶ ON	Operation
	ON ⟶ OFF	Stop



CN 21(RED) *1)
or
CN 27(RED) *2)

*1) For wall mounted type / ceiling wall type.
*2) For other types

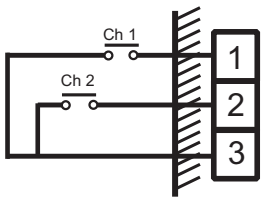


NOTE

1. The last command has priority.
2. The indoor units within the same remote controller group operates in the same mode.
3. The wire connection should be separate from the power cable line.

● In the case of "pulse" input

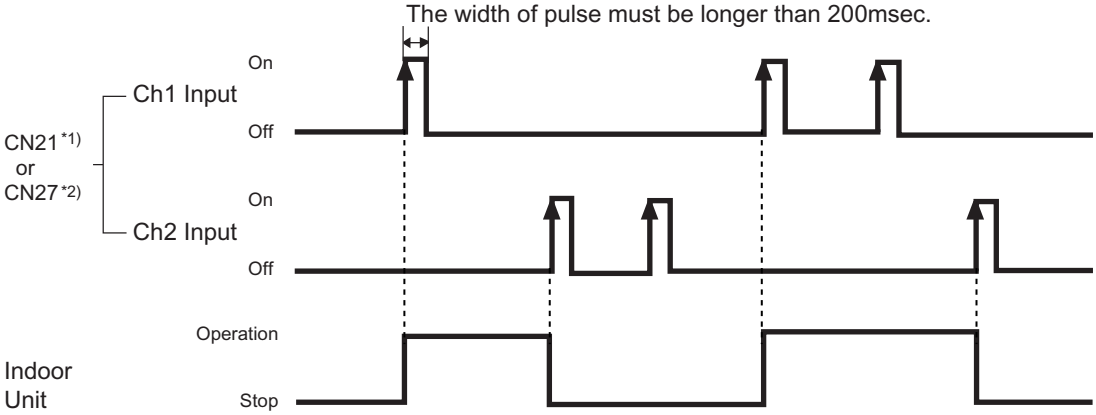
CONNECTOR		INPUT SIGNAL	COMMAND
CN21*1)(RED) or CN27*2)(RED)	Ch1	OFF ⟶ ON	Operation
	Ch2	OFF ⟶ ON	Stop



CN 21(RED) *1)
or
CN 27(RED) *2)

*1) For wall mounted type.
*2) For other types

The width of pulse must be longer than 200msec.



INSTALLATION

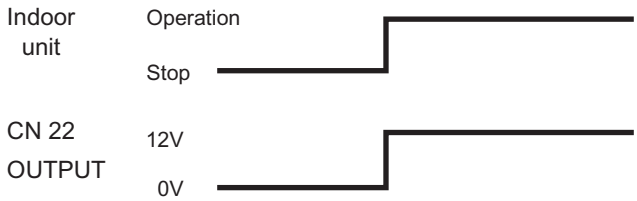
■ OUTPUT

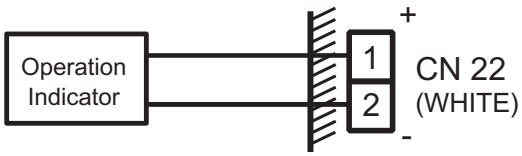
CONNECTOR	OUTPUT VOLTAGE	STATUS
CN22	12V	Operation
	0V	Stop
CN23	12V	Error
	0V	Normal
CN24	12V	Fan run
	0V	Fan stop

・Output voltage : Hi DC12V ± 2V
Lo 0V
・Permissible current : 15mA

● Operation display

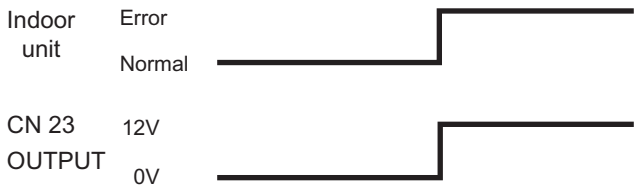
The output for CN22 is ON when the indoor unit is operating.
The output is off when the unit is stopped.

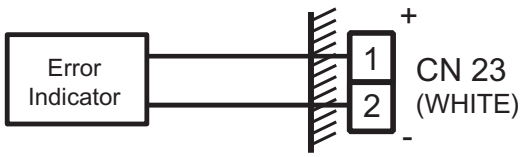




● Error display

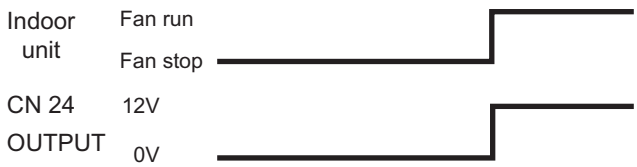
The output for CN23 is ON when an error is generated for the indoor unit.

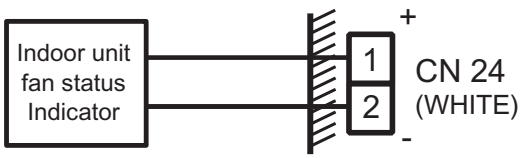




● Inter locking output with indoor unit fan

The output for CN24 is ON when the indoor unit fan is operating.
The output is off when the fan is stopped or during cold air prevention.
The output for CN24 is ON during DRY mode.

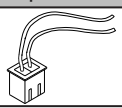
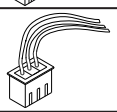




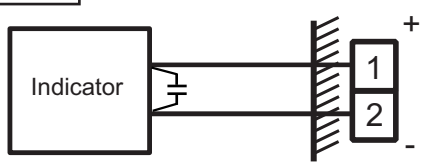
EX) Used for inter lock energize for exhaust fan.

■ PARTS

Following cord (service parts) is required. Please use the parts number shown below to order the cord from your sales representative.

Usage	Name and shapes	Q'ty	Parts No.
For output port	EXTERNAL INPUT WIRE 	1	9368778002
For control input port	EXTERNAL INPUT WIRE 	1	9368779009

※ If the external indicator has malfunction, due to noise please insert a ceramic capacitor (0.1μF 25V or more) near the input port of the equipment.



INSTALLATION

5-5-3. CENTRAL REMOTE CONTROLLER / PC CONTROLLER

■ CONTROL INPUT (ALL ON / ALL OFF)

Indoor units which stored into Central R.C. or PC controller can be operated or stopped by this input. (set up in Transmission adoptor)

- Short circuit detection resistance (R_{ON}) : ≦ 500 (ohm).
- Open circuit detection resistance (R_{OFF}) : ≧ 100 (kilo-ohm).

● Input select

• Central remote controller

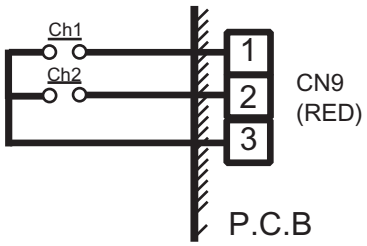
DIP 2-1	DIP 2-2	Input select
ON	OFF	"Edge"
ON	ON	"Pulse"

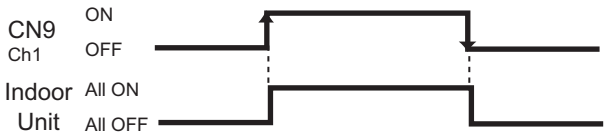
• PC controller

Input select can be set in environmental set up.
(Please refer to PC Controller's setting manual.)

● In the case of "Edge" input

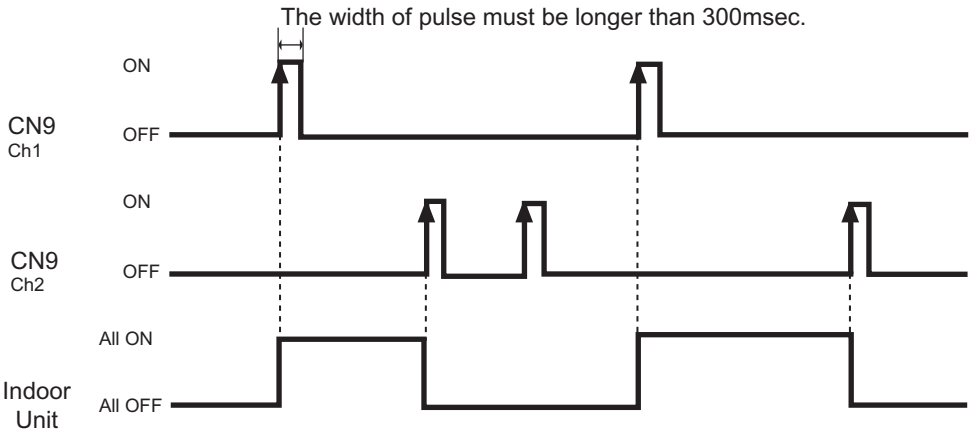
CONNECTOR		INPUT SIGNAL	COMMAND
CN9 (RED)	Ch1	OFF ⟶ ON	All ON
		ON ⟶ OFF	All OFF





● In the case of "Pulse" input

CONNECTOR		INPUT SIGNAL	COMMAND
CN9 (RED)	Ch1	OFF ⟶ ON	All ON
	Ch2	OFF ⟶ ON	All OFF



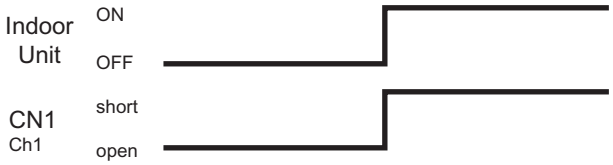
INSTALLATION

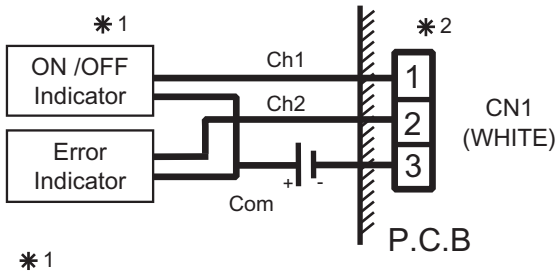
■ OUTPUT

● Operation display

This output indicates the indoor unit's "Operate" or "Stop" status.

CONNECTOR		OUTPUT SIGNAL	STATUS
CN1 (WHITE)	Ch1	open	All of indoor units "OFF"
		short	At least one more indoor units "ON"





✱1
Necessary to insert a diode on both ends of relay coil.

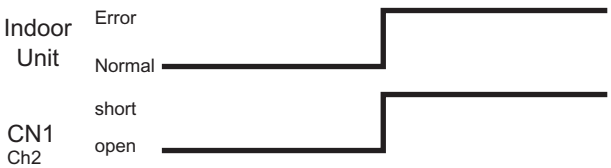
✱2
Pin1 : NPN open collector output (15V 10mA Max)
Pin2 : NPN open collector output (15V 10mA Max)
Pin3 : Ground

INSTALLATION

● Error display

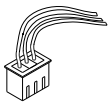
This output indicates the indoor unit's "Normal" or "Error" status.

CONNECTOR		OUTPUT SIGNAL	STATUS
CN1 (WHITE)	Ch2	open	All of indoor units "Normal"
		short	At least one more indoor units "Error"



■ PARTS

Following cord (service parts) is required. Please use the parts number shown below to order the cord from your sales representative.

Name and shapes	Q'ty	Parts No.
EXTERNAL INPUT WIRE 	1	9368779009

5-6. INSTALLATION WORK

5-6-1. INSTALLATION THE OUTDOOR UNIT

■ SELECTING THE MOUNTING POSITION

⚠ WARNING
Install the unit where it will not be tilted by more than 3°.
When installing the outdoor unit it may be exposed to strong wind, fasten it securely.

* If possible, do not install the unit where it will be exposed to direct sunlight. (If necessary ,install a blind that does not interfere with the air flow.

* Install the outdoor unit in a location where it will avoid getting dirty and getting wet from rain.

* Install the unit where connection to the indoor unit is easy.

* During heating operation, drain water flows from the outdoor unit. Therefore, install the outdoor unit in a place where drain water flow will not be obstructed. (Reverse cycle model only)

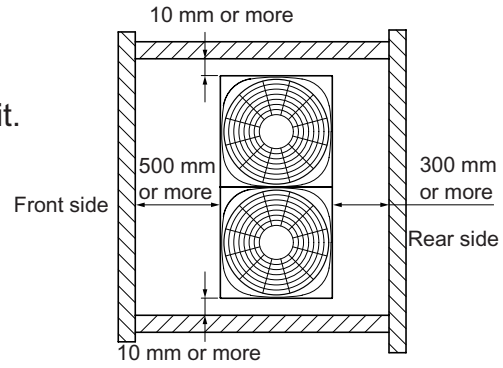
* Do not place animals and plants in the path of the warm air.

* Take the air conditioner weight into account and select a place where noise and vibration will be flow.

* Select a location so that the warm exhaust air and noise from the outdoor unit do not disturb neighbors.

* Install inlet and outlet ducts in order to maintain stable operation in cold or snowy regions.

● Installing the unit individually

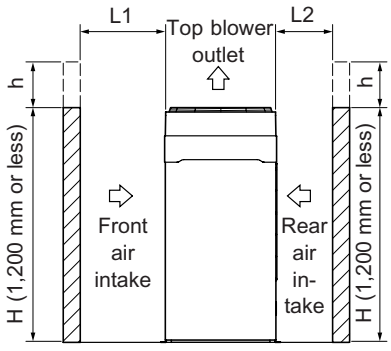


* While the gap in the rear side requires at least 300mm for inlet ventilation, but keep an enough spacing by considering the future servicing and constructions from the rear.

* Provide the required space shown in Figure so that the air flow is not blocked.

* The height of the wall (H) on the front side and rear side should be 1,200 mm or less.

* If the wall height exceeds 1,200 mm, add dimension (h) to the respective space dimensions L1 and L2.
  H ≦ 1,200 : L1 ≧500, L2 ≧300
  H > 1,200 : L1 > 500+h, L2 > 300+h



* The dimensions shown above are minimum required limit to prevent a decline in performance. The space provided should be increased in consideration of passageways and room for maintenance.

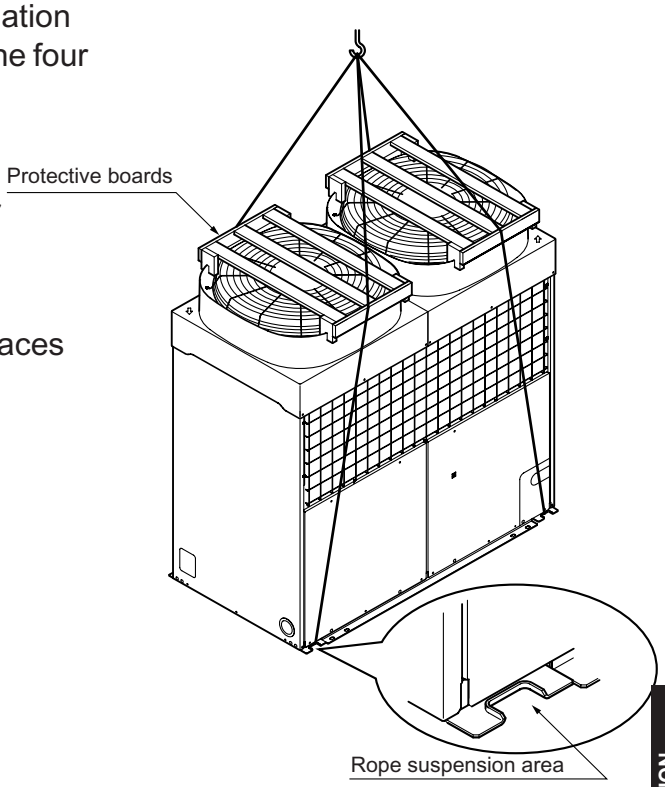
Note: For the installation of multiple units and the duct connections, please refer to the section 3-5 INSTALLATION SPACE.

INSTALLATION

■ HOISTING METHOD

	Weight
Outdoor unit	approx.300kg

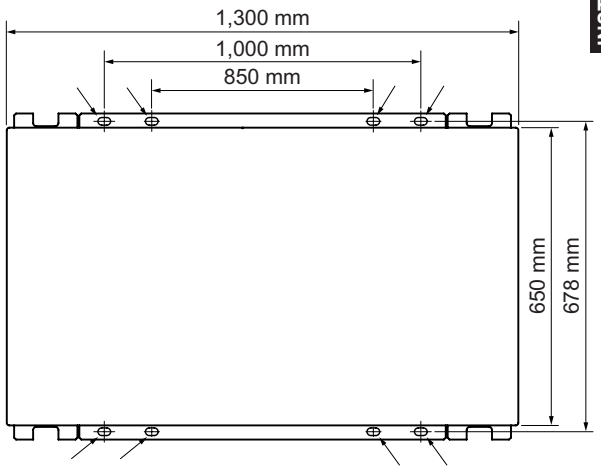
* If suspending the unit and conveying it to its installation location, place the ropes under the bottom, using the four cutouts places on the front and rear provided for suspending it.
* Use rope made of strong material enough to bear the unit's weight.
* Be sure to suspend the unit with ropes from 4 places and be careful not to subject it to impacts.
* Place protective boards on the unit so the rope doesn't make contact with the bell mouth.
* Use 2 ropes which are 7 m in length or longer



INSTALLATION

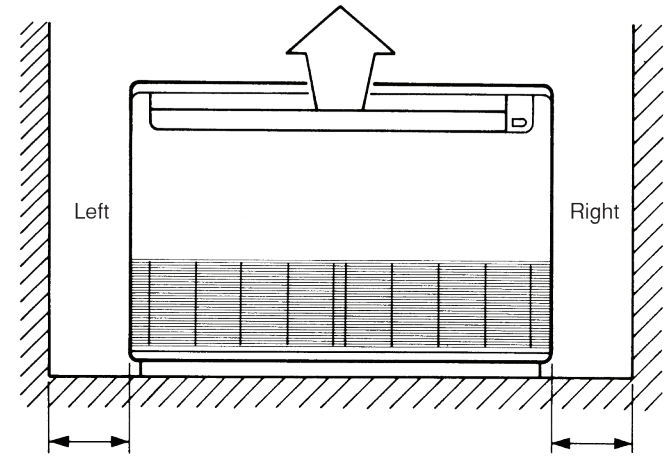
■ ANCHOR BOLT POSITIONS

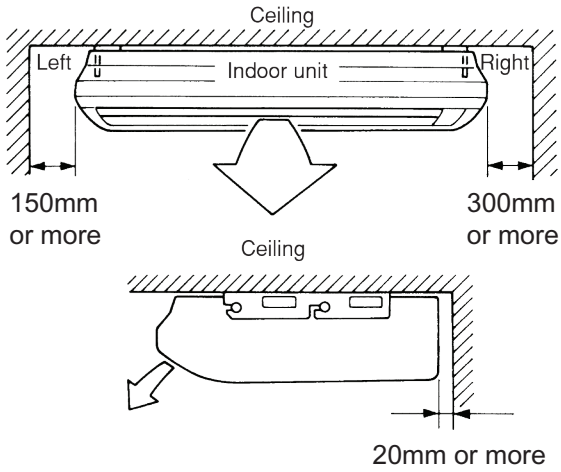
* The distance between the left and right anchor bolts should be at least 850 mm.
* Set the unit on a strong stand, such as concrete blocks to minimize shock and vibration.
* Do not set the unit directly on the ground because it will cause problems.
* When the outdoor unit will be exposed to strong wind, fasten it strongly with anchor bolts.



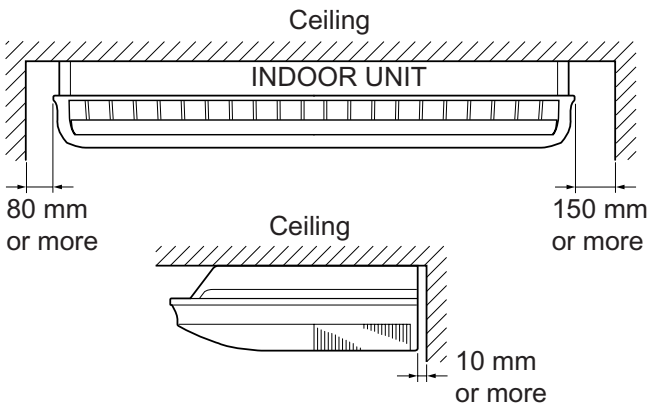
5-6-2. INSTALLATION SPACE

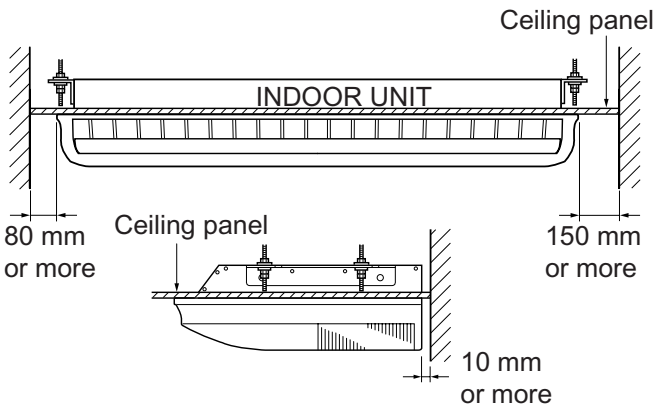
■ FLOOR / CEILING TYPE



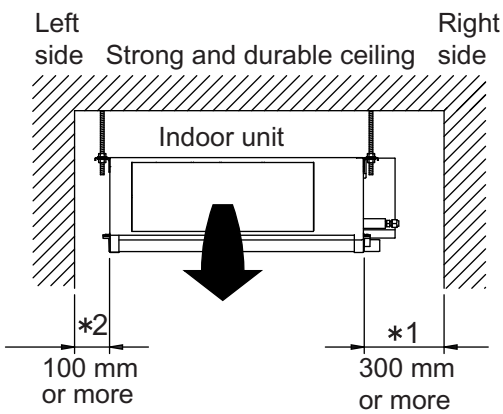


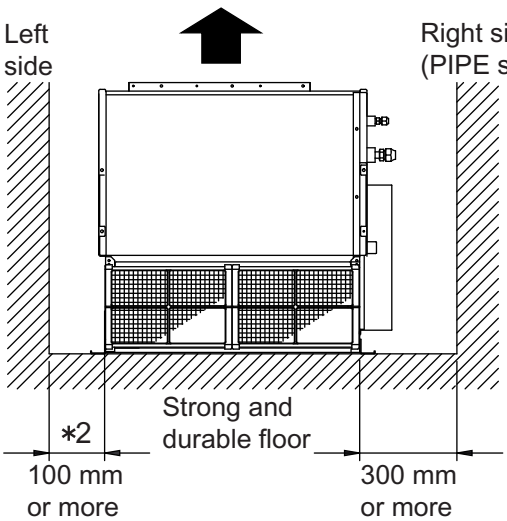
■ CEILING TYPE

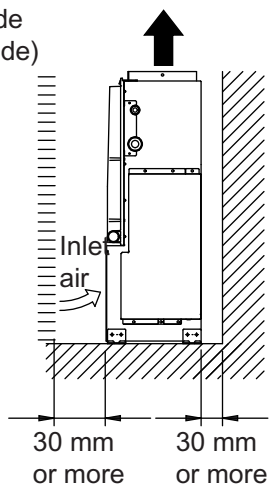




■ COMPACT DUCT TYPE





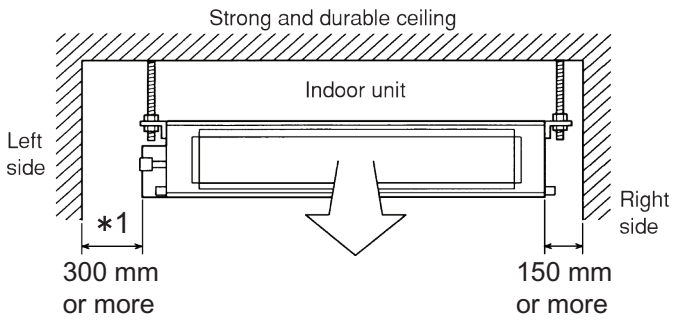


*1 When drain pump is used, leave the space required for service and maintenance (Refer to 5-6-6. DRAIN PUMP UNIT)

*2 When drain hose is connected, the required dimension is 150mm or more.

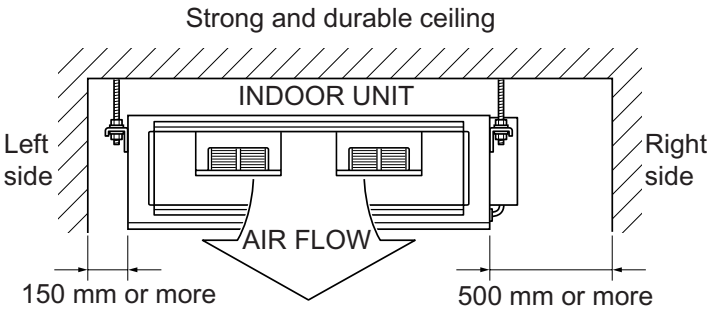
INSTALLATION

■DUCT TYPE

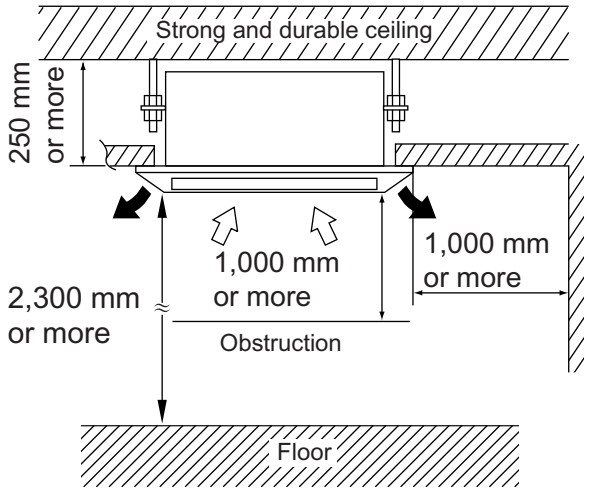


∗1 When drain pump is used, leave the space required for service and maintenance (Refer to 5-7-3. DRAIN PUMP UNIT)

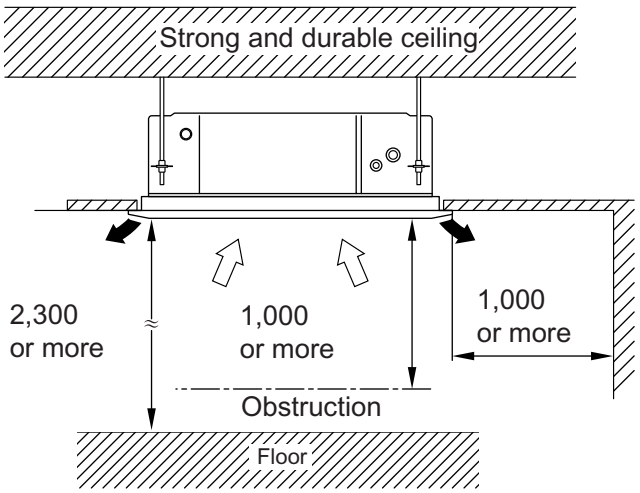
■HIGH PRESSURE DUCT TYPE



■COMPACT CASSETTE TYPE



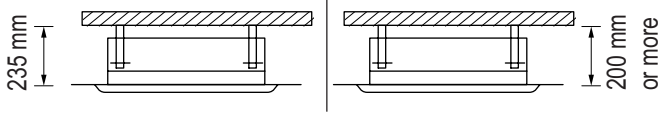
■CASSETTE TYPE



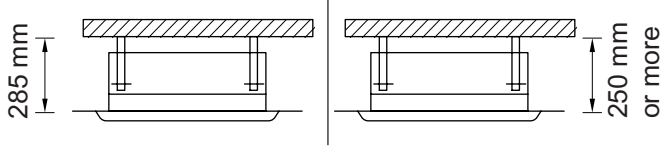
You can select 2-way setting

(A) Standard setting **(B) Slender setting**

AU20 - 30

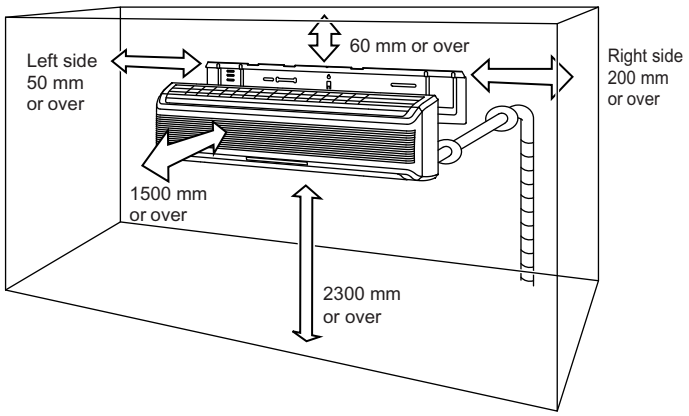


AU36 - 54

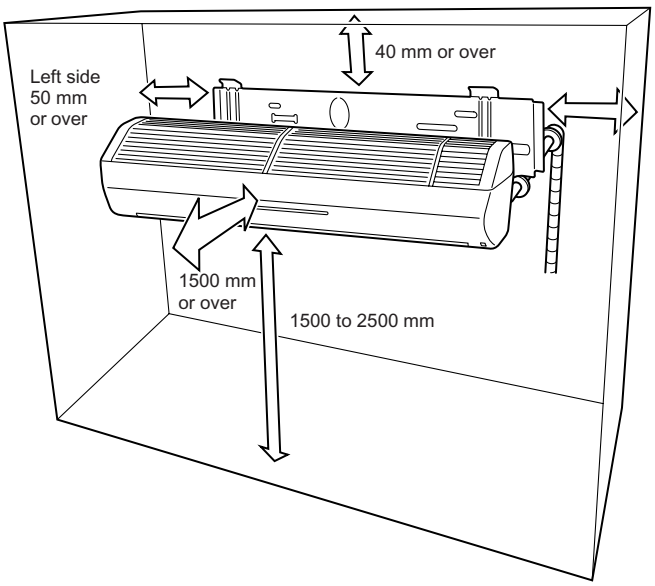


INSTALLATION

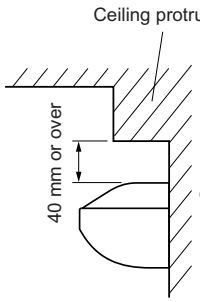
■ WALL MOUNTED TYPE



■ CEILING WALL TYPE



⚠ CAUTION



If there is a section of the ceiling that protrudes, mount in a position that allows for 40 mm or more of space between the unit and the protrusion.

INSTALLATION

■ CAUTION

⚠ WARNING
Install at a place that can withstand the weight of the indoor and outdoor units and install positively so that the units will not topple or fall.

⚠ CAUTION
Do not install where there is the danger of combustible gas leakage.
Do not install the unit near a source of heat, steam, or flammable gas.
If children under 10 years old may approach the unit, take preventive measures so that they cannot reach the unit.

Decide the mounting position with the customer as follows:

Install the indoor unit on a strong wall which is not subject to vibration.

The inlet and outlet ports should not be obstructed :the air should be able to blow all over the room.

Do not install the unit where it will be exposed to direct sunlight.

Install the unit where the connection pipe can be easily installed.

Install the unit where the drain pipe can be easily installed.

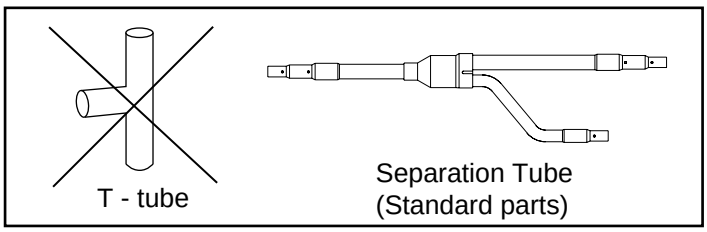
Take servicing, etc. into consideration and leave the spaces.
Also install the unit where the filter can be removed.

INSTALLATION

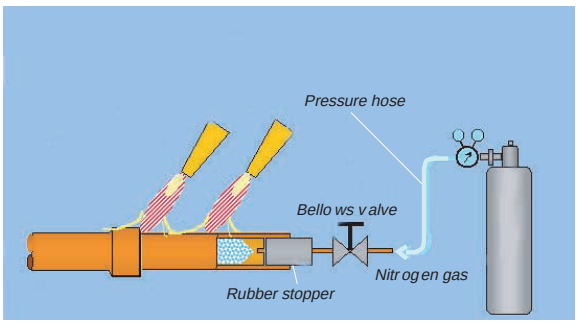
5-6-3. PIPING CONNECTION

■ CAUTION

- ✳ Use the designated size (Diameter & thickness) of refrigerant pipes
- ✳ Those pipes purchased locally may contain dust inside.
  Please blow out the dust by dried inert gas when using
- ✳ Be careful to avoid the dust or water falling into the pipe when performing piping process and piping installation.
- ✳ When processing the pipe, make the number of bending portion as few as possible, and the bending radius as large as possible.
- ✳ To process the branch, do not use T-shaped pipe, which causes a uneven refrigerant flow. Use the optionally available standard branch kit.



- ✳ If the diameter of the required pipe is different from the branch unit, either cut it out or use the reducer.
- ✳ Keep the permissible length of every piping limitation to prevent a defect or cooling/heating failure.
- ✳ When replacing the unit, never use piping which has been used for previous installations. Only use the new piping.
- ✳ While welding the pipes, be sure to blow dry nitrogen gas through them.



- ✳ Make sure to insulate the refrigeration pipes separately with ample thickness of heat-resistant polyethylene form etc. For the connecting portion, apply the enough insulation to avoid any gap.
- ✳ To be connecting V series indoor unit to S series outdoor unit, flare size of a part of models has differed from that connection pipe.
  Please use the adaptor (Accessory) for connecting pipe.

INSTALLATION

■ CAUTION

✳ Welding

While welding the pipe, be sure to blow dry nitrogen gas through the pipes.
If not used, it will be caused to damage for compressor and clog the strainer and Electronic Expansion Valve.

Example) Inside state of welding pipe section

Nitrogen Gas used	Nitrogen Gas used but not sufficient (Oxygen gas still inside the pipe)	Nitrogen Gas does not used

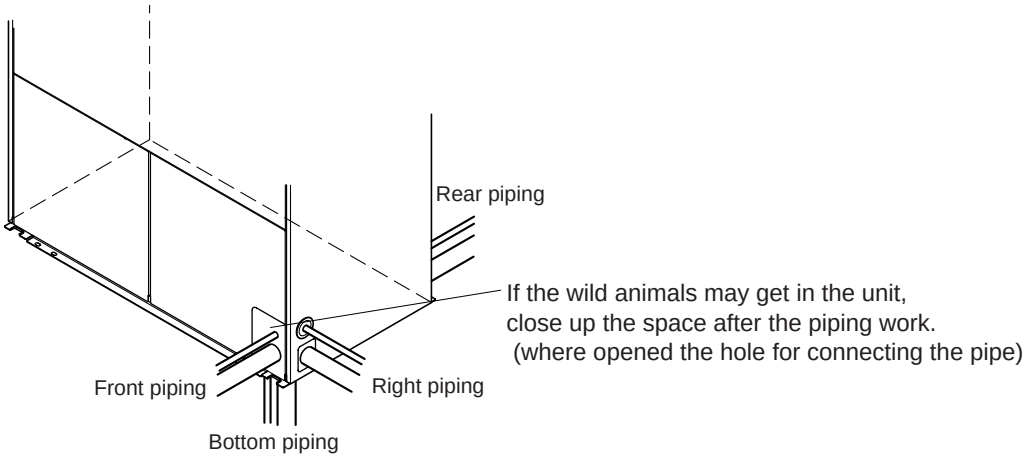
✳ Make sure to insulate the refrigeration pipes separately with ample thickness of heat-resistant polyethylene form etc. For the connecting portion, apply the enough insulation to avoid any gap.

INSTALLATION

■ OUTDOOR UNIT PIPE CONNECTION

● Piping mounting direction (4-way mounting possible)

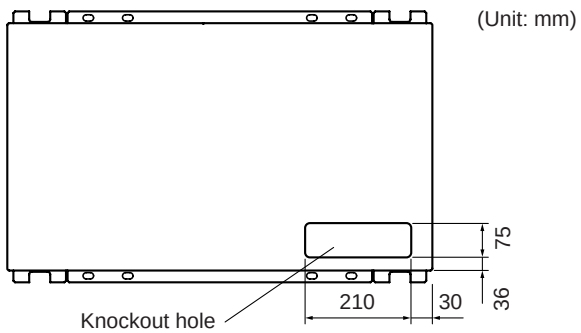
There are four possible ways to connect the piping to the outdoor unit.
Knockouts are provided all the place where the pipes need to be connected.


Rear piping
If the wild animals may get in the unit,
close up the space after the piping work.
(where opened the hole for connecting the pipe)
Front piping
Right piping
Bottom piping

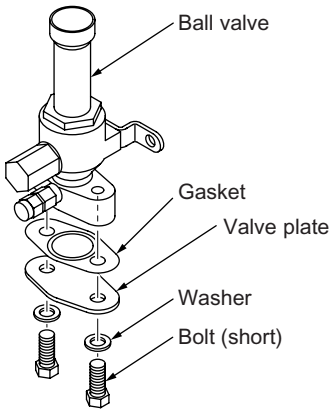
INSTALLATION

If the piping is connected from the rear or bottom, be sure that there is enough space around the unit to make connections.

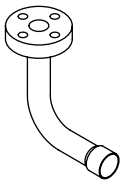
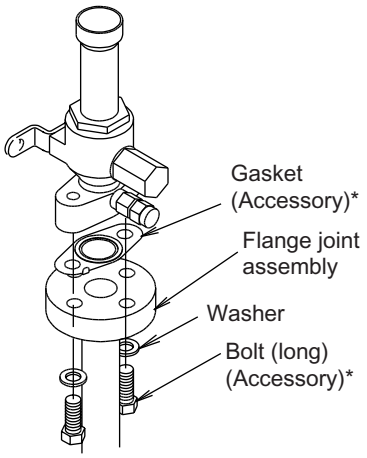
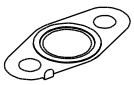
When connecting the piping to the bottom of the unit,open a knockout hole at the bottom of the unit.



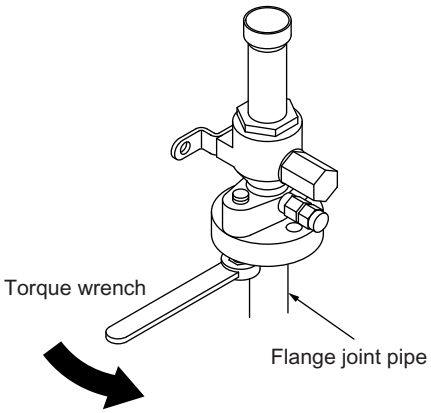
- **Before connecting flange joint assembly to ball valve. Remove bolts, valve plate and gasket.**

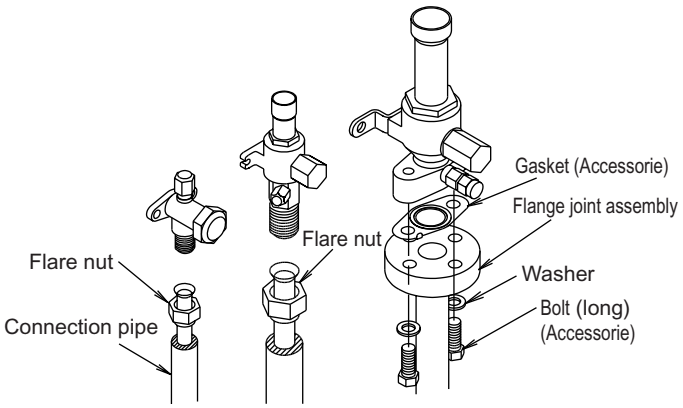


ACCESSORY PARTS

Description	Q'ty	
Flange joint assembly 	1	
Gasket 	1	
Bolt (long)	2	*Use the provided accessory parts. Never use the other or used parts.

- **Connecting the flange joint pipe.**





Leave the valve of Outdoor Unit fully close and do not operate until all the piping connections are done and the pressure test and air vacuum have been successfully completed.

- **Flare nut tightening torque**

Pipe	Tightening torque
Liquid pipe	500 to 550 kgf·cm (49 to 53.9 N·m)
Suction gas pipe (Bolt)	350 to 400 kgf·cm (34.3 to 39.2 N·m)
Discharge gas pipe	800 to 1000 kgf·cm (78.4 to 98 N·m)

- **Pipe diameter**

Unit:mm

Suction gas	Discharge gas	Liquid
28.58(1.2)	19.05(1.0)	12.70(0.8)

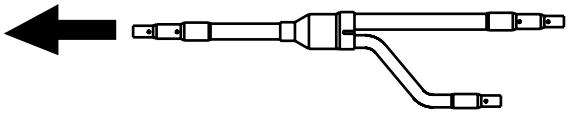
( ):thickness

■SEPARATION TUBE

●Separation tube selection

Total capacity of indoor units	Model name of separation tube to be used
	Heat recovery model
Less than 60	UTR-BP54MA
61 or more	UTR-BP90MA

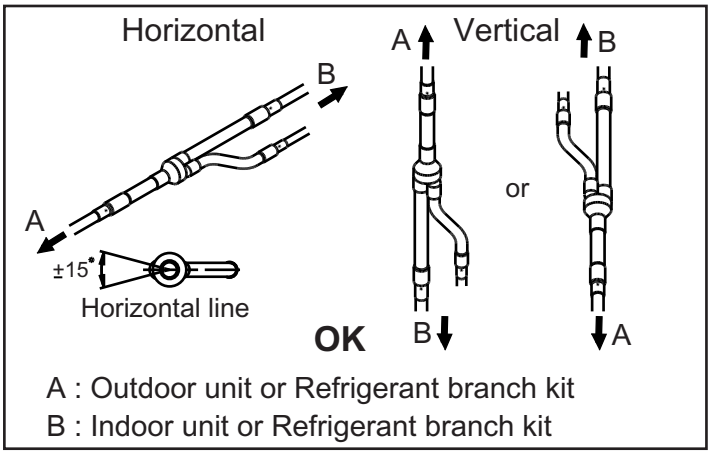
Outdoor unit or Refrigerant branch kit



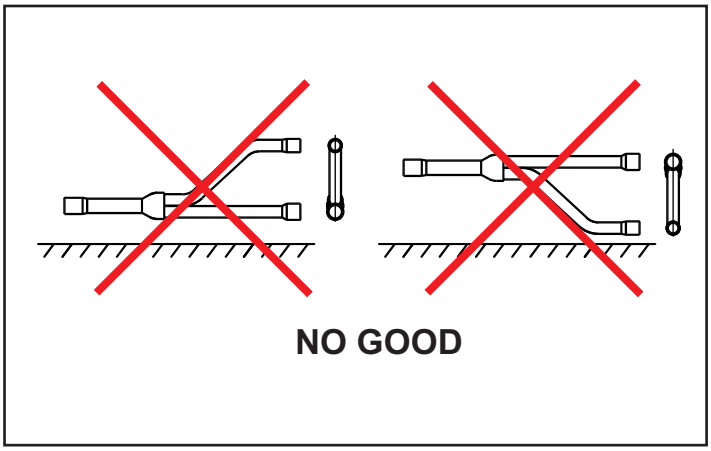
Indoor unit or Refrigerant branch kit

●Installation angle

Install the separation tube so that it branches either horizontally or vertically.

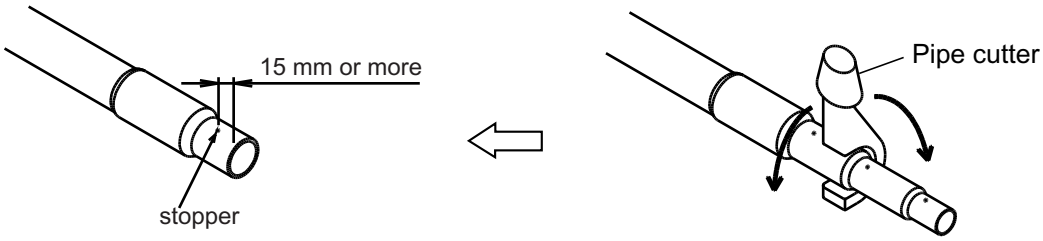


A : Outdoor unit or Refrigerant branch kit
B : Indoor unit or Refrigerant branch kit

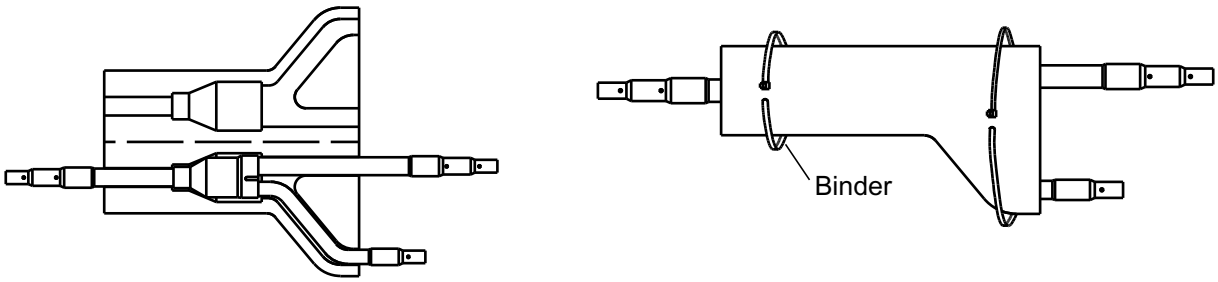


●Installation

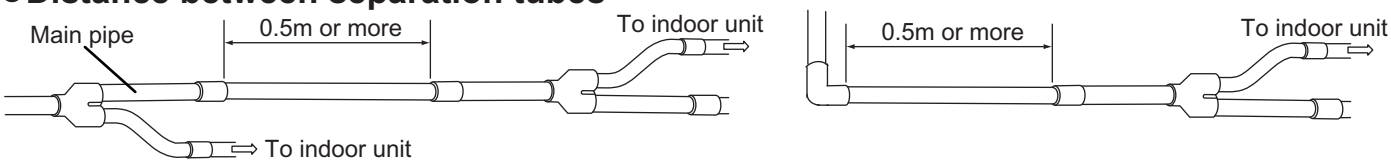
Use the pipe cutter to cut at the location which matches the piping size when the piping size is different.



After brazing the piping, attach heat insulation to the separation tube.
Remove the protective paper for the tape attached to the heat insulation for the separation tube.
Tighten by using binders in two locations.



●Distance between separation tubes



Caution

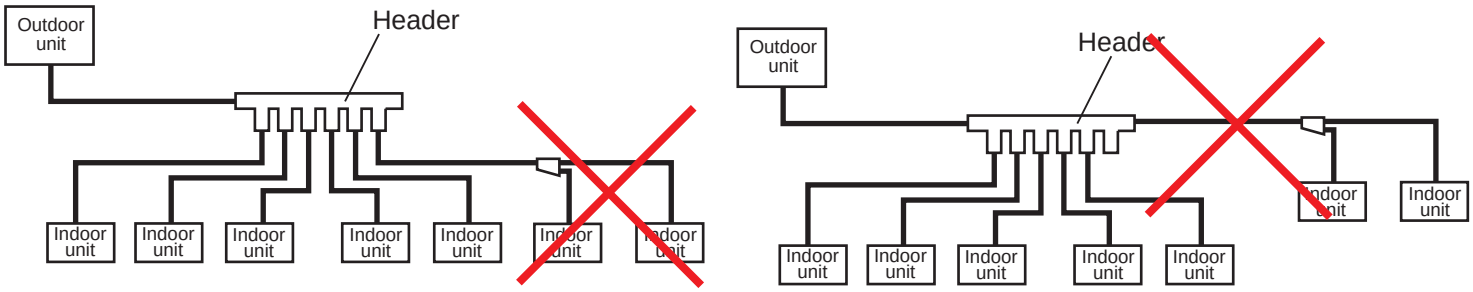
Leave the distance 0.5m or more for straight part to separation tube.
(To prevent the outdoor unit mulfunction and generation of refrigerant noise)

INSTALLATION

■ Header installation

• Caution

Separation after header is not allowed.



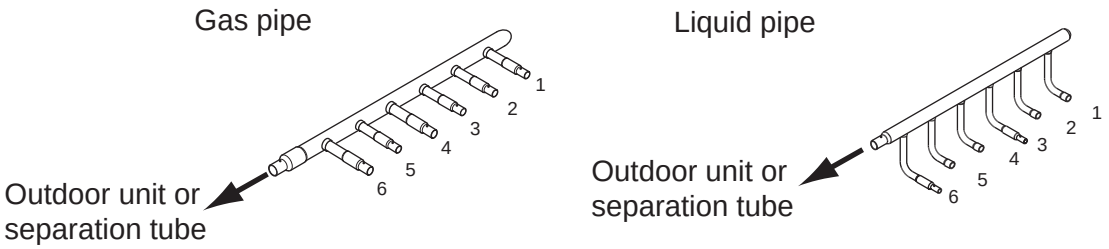
• Header selection

Number of branches (Number of indoor units connected)	Model name of header to be used
	Cooling only model Heat pump model
6 units or less	UTR-HD906R
7 to 8 units	UTR-HD908R

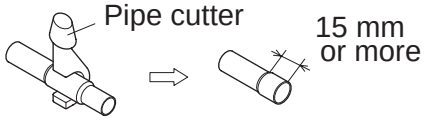
INSTALLATION

• Piping connection

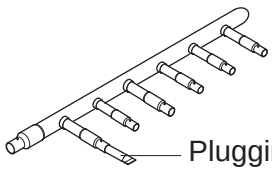
(1) When connecting the connection pipes from the indoor units, connect them to the header branch pipes in the order 1, 2, 3, etc.



(2) Use a pipe cutter to cut at the location that matches the piping size.
Be sure to cut the piping off at least 15 mm from the piping stopper
If the piping is cut too short, leaks can occur. After cutting the piping off, be sure to deburr it.
Make sure that dirt or water does not enter the piping when connecting the piping.



(3) Attach a plugging pipe provided if there is no piping connected at the headers.

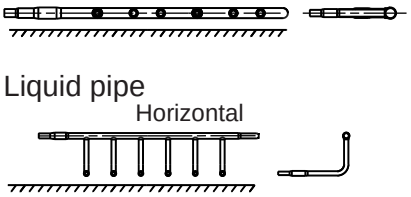


●Installation

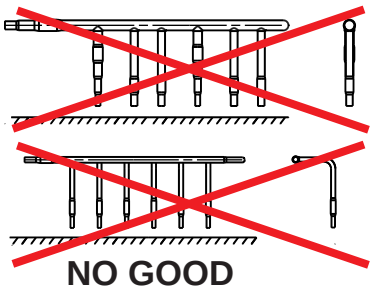
∗Install the header so that it branches horizontally.

Gas pipe Horizontal

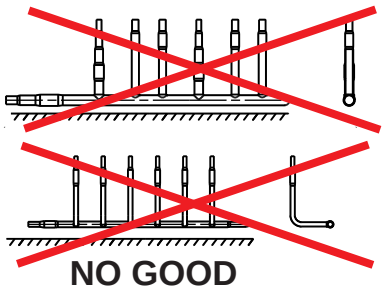
Liquid pipe Horizontal



OK

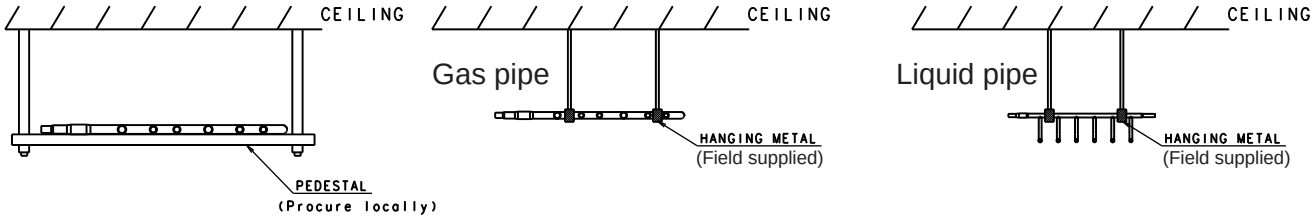


NO GOOD



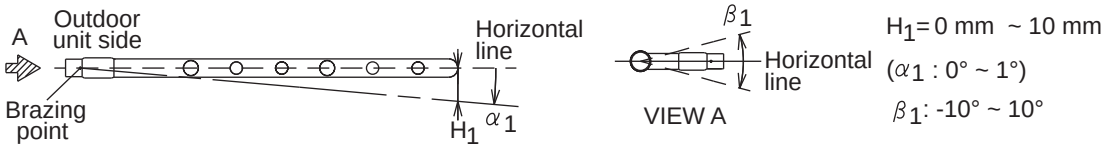
NO GOOD

∗Use header support as necessary.

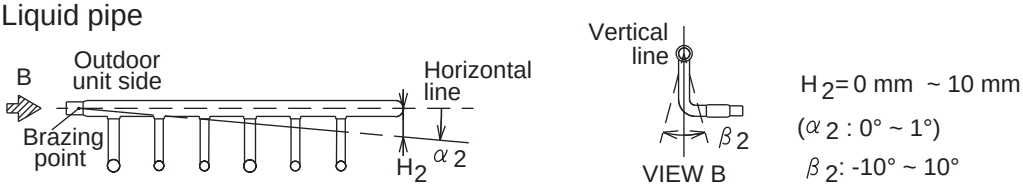


∗Use a level to make sure that the header is positioned as shown in following figure, and then, secure it in place.

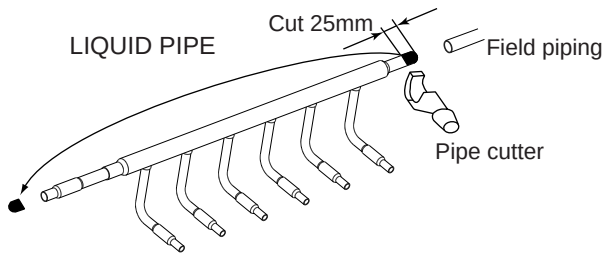
Gas pipe



Liquid pipe



∗Connecting the field piping from outdoor unit for opposite side,cut the pipe end to connect the pipe and close the opposite end.

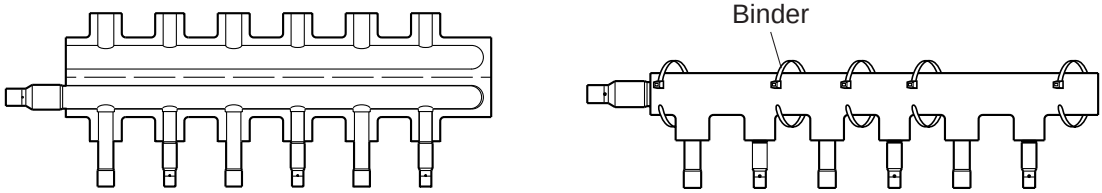


●Heat insulation installation

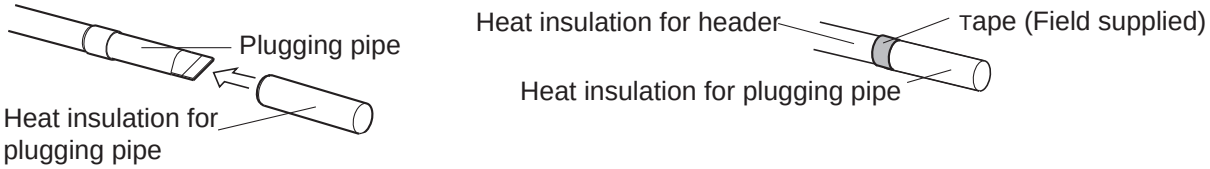
After brazing the piping, attach heat insulation.

Remove the protective paper for the tape on the heat insulation for the header and attach it.

Tighten by using binders in five locations.



Cover the plugging pipe with heat insulation and seal with tape.



INSTALLATION

■RB UNIT

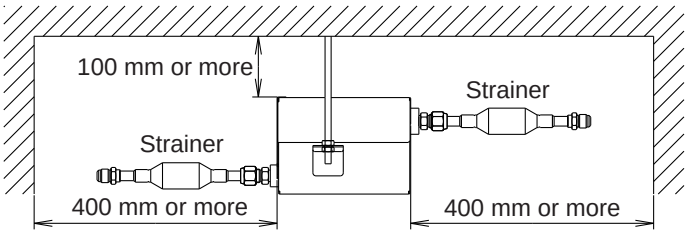
●RB unit selection

Number of branches (Number of indoor units connected)	Model name of RB unit to be used
1 units	UTF-Y54A1A
1 to 4 units	UTF-Y90A4A

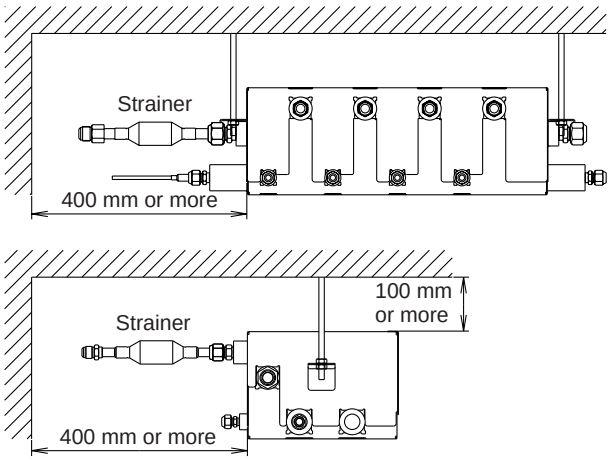
●Selecting the mouhting position

(1) Install the RB unit on a place having a sufficient strength so that it withstands against the weight of the RB unit.
(2) Leave the space required to service the RB unit.
(3) The ceiling rear height as shown below.
(4) Install the unit where noise and vibrations are not amplified.

UTF - Y54A1A

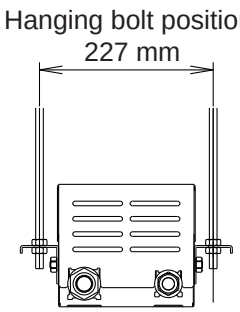


UTF - Y90A4A

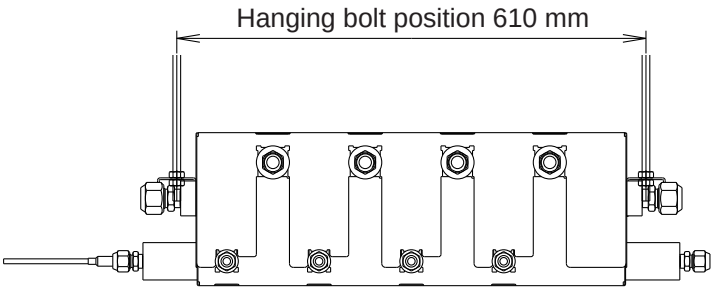


●Position the Hanging Bolt

UTF - Y54A1A



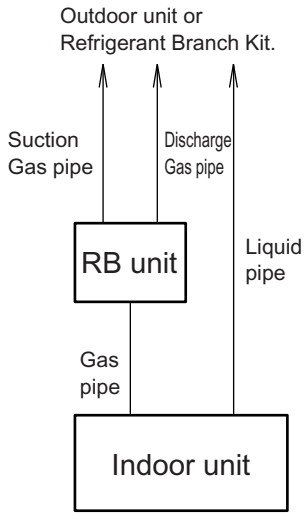
UTF - Y90A4A



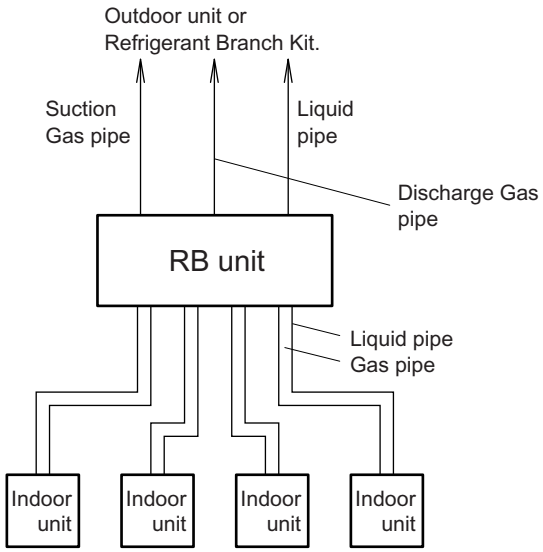
INSTALLATION

• Connection pipe outline

UTF - Y54A1A



UTF - Y90A4A



• RB unit pipe size

unit : mm

	UTF - Y54A1A		UTF - Y90A4A		
	Suction Gas pipe	**Discharge Gas Pipe**	**Suction Gas pipe**	**Discharge Gas Pipe**	**Liquid pipe**
Side of Outdoor unit	ϕ 19.05	ϕ 15.88	ϕ 28.58	ϕ 19.05	ϕ 12.70
Side of Indoor unit	ϕ 15.88		ϕ 15.88 x 4		ϕ 9.52 x 4

• Conection pipe size

UTF - Y54A1A

unit : mm

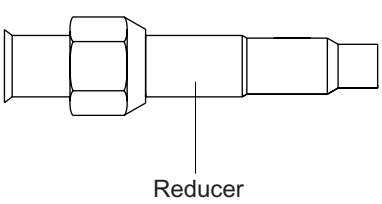
	Model code of Indoor unit	Suction Gas Pipe	Discharge Gas Pipe
Outdoor unit	Less than 30	* ϕ15.88	* ϕ12.70
	31 or more to 60	ϕ19.05	ϕ15.88
Indoor unit	7, 9	* ϕ9.52	
	12, 14	* ϕ12.70	
	18, 20, 24, 25, 30	ϕ 15.88	
	36, 45, 54, 60	* ϕ19.05	

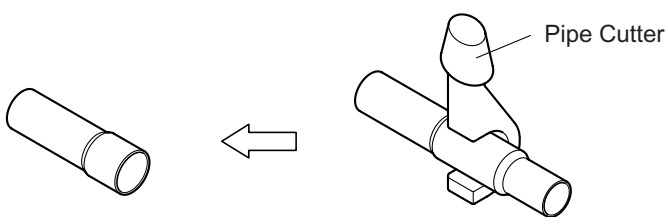
UTF - Y90A4A

unit : mm

	Model code of Indoor unit	Suction Gas Pipe	Discharge Gas Pipe	Liquid Pipe
Outdoor unit	Less than 30	* ϕ15.88	* ϕ12.70	* ϕ9.52
	31 or more to 60	ϕ19.05	ϕ15.88	
	61 or more	ϕ28.58	ϕ19.05	ϕ12.70
Indoor unit	7, 9	* ϕ9.52		* ϕ6.35
	12, 14	* ϕ12.70		
	18, 20, 24, 25	ϕ 15.88		
	30			ϕ9.52
	36, 45, 54, 60	* ϕ19.05		

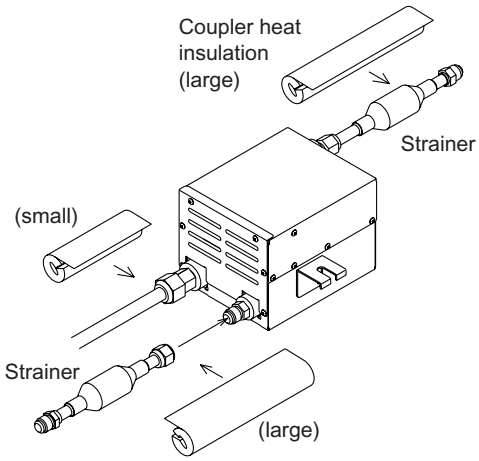
If there is (*) shown, a reducer will be needed when connecting the piping.
As shown in the illustration below, flare the reducer provided or cut with a pipe cutter at the location that matches the diameter



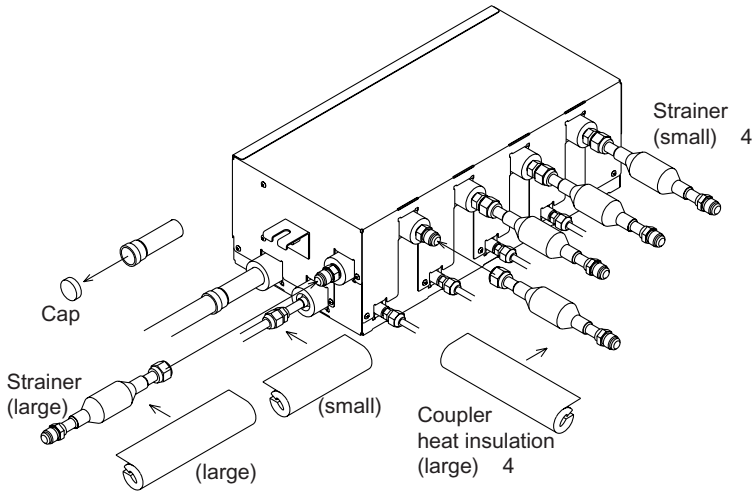


• Installation

Procedure for connecting pipe
Make sure to install "strainer" as shown below.

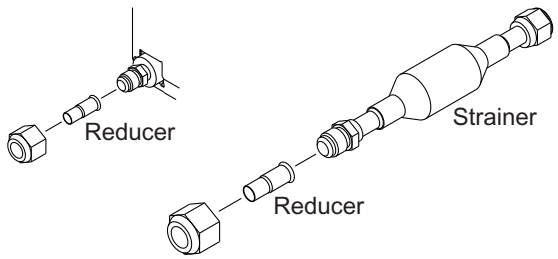


UTF - Y54A1A



UTF - Y90A4A

If a reducer is used, flare it before connecting



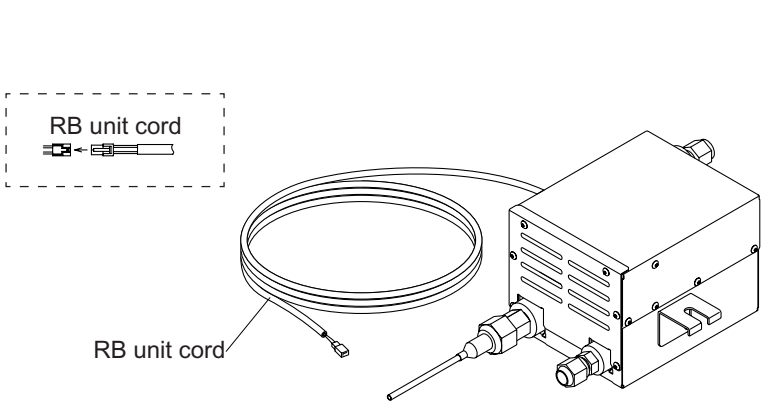
Flare nut tightening torque

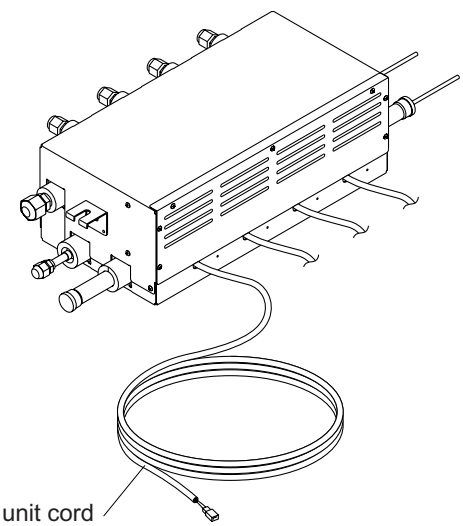
Flare nut	Tightening torque
9.52 mm dia.	30.4 to 34.3 N · m 310 to 350 kgf · cm
12.70 mm dia.	49.0 to 53.9 N · m 500 to 550 kgf · cm
15.88 mm dia.	73.5 to 78.4 N · m 750 to 800 kgf · cm
19.05 mm dia.	78.4 to 98 N · m 800 to 1,000 kgf · cm

INSTALLATION

• Electrical wiring

* Pull the RB unit cord into the indoor unit control box and connect it to the connector (white) from the circuit board.
* The RB unit cord is 10 meters long. If the distance to the indoor unit exceeds the length of the RB cord, procure a cord locally and extend the length. The specifications for the cord are as follows. The length of the cord can be extended a maximum of 40 m.
* Specifications: 4 core shielded cord 0.75 mm^2 or more





■AIR TIGHT TEST

After the piping has been installed, perform a sealing test.
Charge the piping with nitrogen to within the sealing test pressure (2.94 MPa).
After 24 hours, check that the pressure has not fallen.
Make sure to add the pressure to both Gas pipe and Liquid pipe.
Perform the leak test on all flared and brazed parts.
Note: When the ambient temperature changes 5 deg. ,the test pressure changes 0.05MPa.

■VACUUM PROCESS

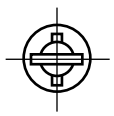
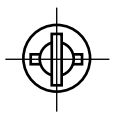
⚠ CAUTION
Do not purge the air with refrigerant but use a vacuum pump to remove air from the indoor unit and connection pipes!

- ✳ Remove the cap, and connect the gauge manifold and the vacuum pump to the charging valve by the service hoses.
- ✳ Vacuum the indoor unit and the connecting pipes until the pressure gauge indicates -76 cmHg.
- ✳ When -76 cmHg is reached, operate the vacuum pump for at least 1 hour.
- ✳ After vacuuming inside the indoor unit and connecting pipes,remove the cap of the three valves.
- ✳ Open the handle (spindle) of the Large and middle valves(Ball valve).
  Open the spindle of the Small valve(3 way valve) with a hexagon wrench.
- ✳ Tighten the cap of the three valves to the specified torque.

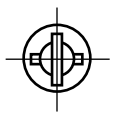
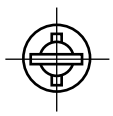
INSTALLATION

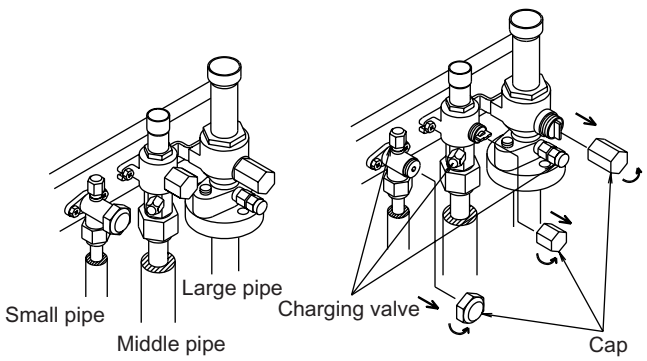
	Tightening torque	
	Ball valve	**3 way valve**
Spindle (handle)	15 kgf•cm (1.47 N•m) or less	100 to 120 kgf•cm (9.8 to 11.7 N•m)
Cap	150 to 200 kgf•cm (14.7 to 19.6 N•m)	200 to 250 kgf•cm (19.6 to 24.5 N•m)

Ball valve (Suction Gas)

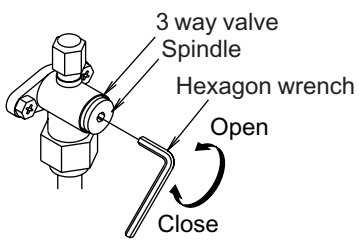
Open valve state	Closed valve state
	

Ball valve (Discharge Gas)

Open valve state	Closed valve state
	



3 way valve



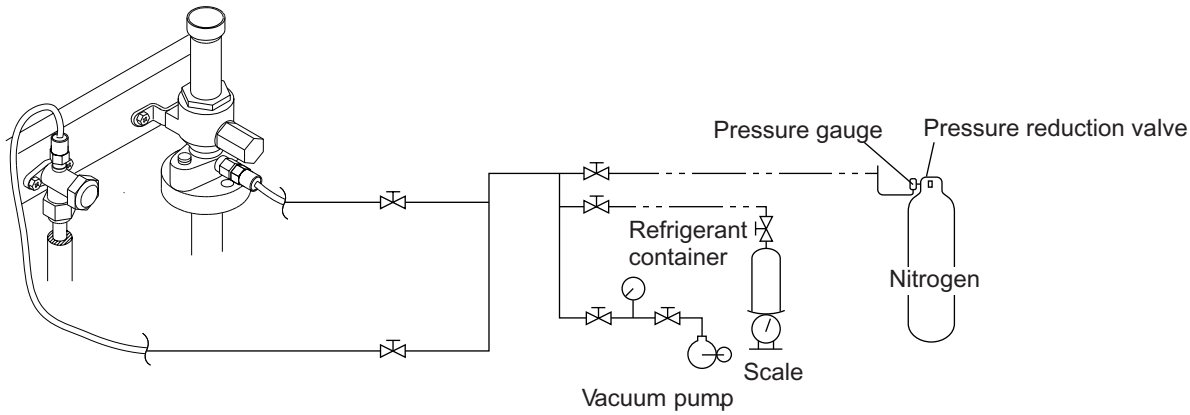
If the spindle (handle) is not fully open, performance will degrade and an abnormal sound will be generated.

■ADDITIONAL CHARGE

* Always add the refrigerant for the appropriate amount.
  Refer the additional refrigent charge amount to item 5-1-4 "ADDITIONAL CHARGE CALCULATION".
* Either larger or smaller refrigerant charge amount leads to the cause of trouble.
* For after service purpose , the added refrigerant charge amount and the calculation shall be indicated firmily on the service label over the control box cover.

⚠ CAUTION
When moving and installing the air conditioner,do not mix gas other than the specified refrigerant inside the refrigerant circuit.
When chaging the refrigerant ,always use an electronic balance for refrigerant chaging (to measure the refrigerant by weight).
Add refrigerant from the charging valve after the completion of the work.
The maximum length of the piping is 100 m (actual pipe length). If the units are further apart than this, correct operation can not be guaranteed.

INSTALLATION



5-6-4. ELECTRICAL WIRING

Always perform the installation referring to the installation instruction sheet, based on your local regions related laws and regurations,and electric company

⚠ WARNING
Before starting work, check that power is not being supplied to the outdoor unit.
Connect the connection cord firmly to the terminal board. Imperfect installation may cause a fire.
Always fasten the outside covering of the connection cord with the cord clamp. (If the insulator is chafed,electric leakage may occur.)
Always connect the ground wire.

• Connect wiring to the terminals

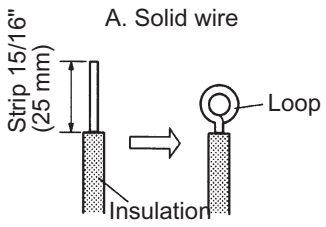
A. For solid core wiring (or F-cable)

Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 15/16"(25 mm) to expose the solid wire.

Using a screwdriver, remove the terminal screw(s) on the terminal board.

Using pliers, bend the solid wire to form a loop suitable for the terminal screw.

Shape the loop wire properly, place it on the terminal board and tighten securely with the terminal screw using a screwdriver.



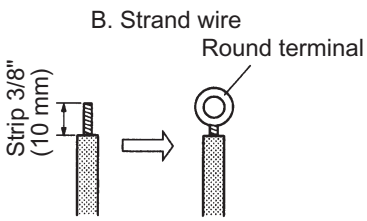
B. For strand wiring

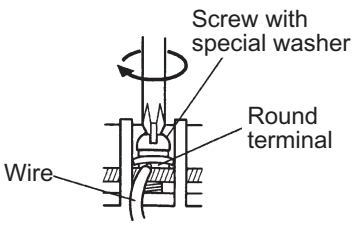
Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 3/8" (10 mm) to expose the strand wiring.

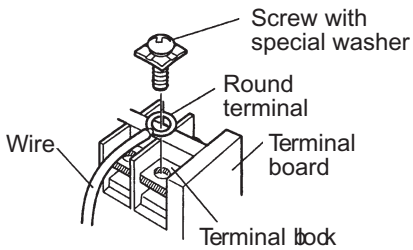
Using a scre wdriver, remove the terminal screw(s) on the terminal board.

Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped wire end.

Position the round terminal wire, and replace and tighten the terminal screw using a screwdriver.





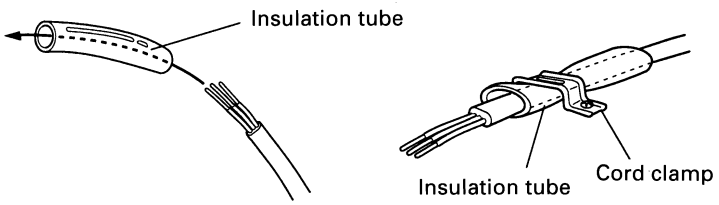


INSTALLATION

• Fix the connection cord and power supply cord at the cord clamp

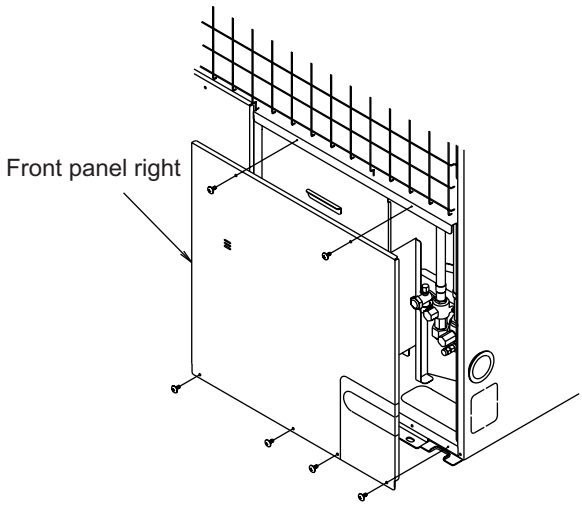
After passing the transmission cord and power supply cord through the insulation tube, fasten it with the cord clamp.

Use VW-1,0.5 to 1.0mm thick, PVC tube as the insulation tube.

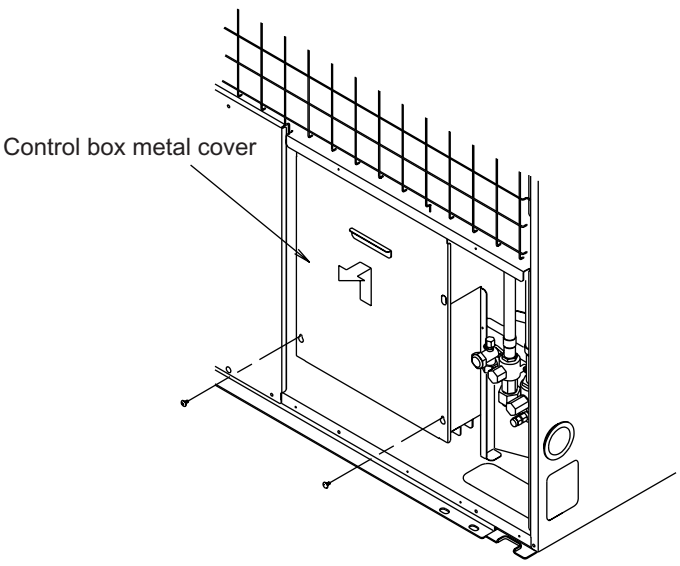


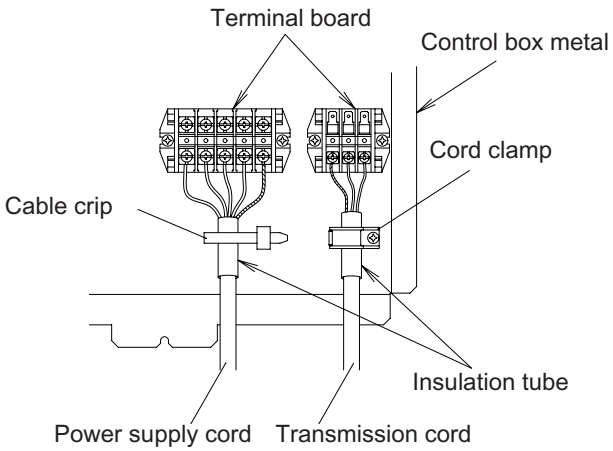
■ OUTDOOR UNIT

(1) Remove the front panel right.



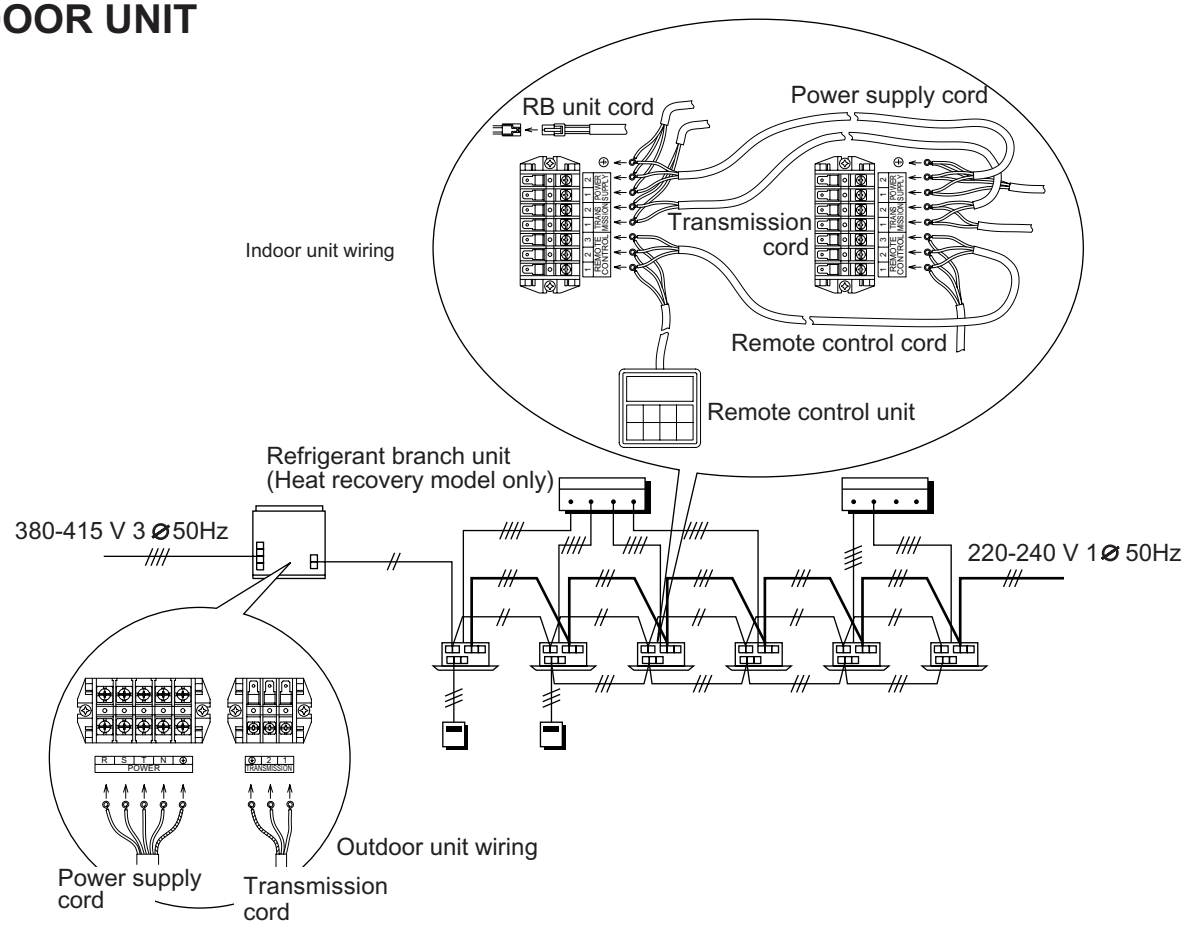
(2) Remove control box metal cover and connect the power supply cord and transmission cord.





INSTALLATION

■INDOOR UNIT



INSTALLATION

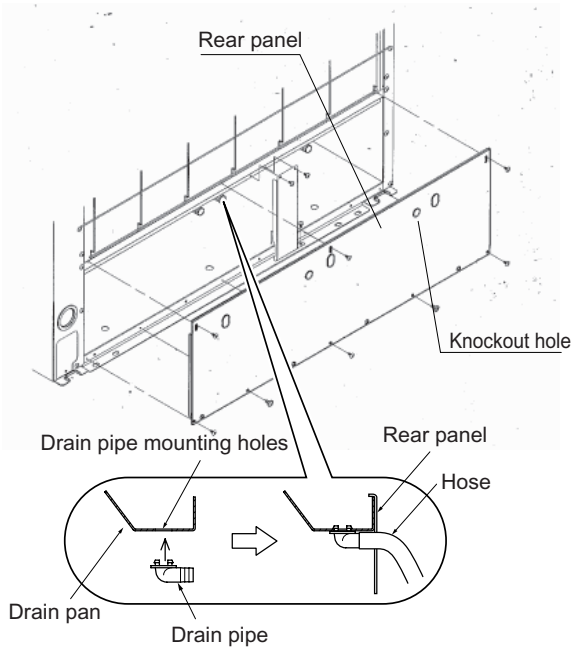
⚠ CAUTION
Use care to wire properly. (Miss-wiring will result in damage.)
Never bundle the power supply cord, transmission cord and remote controller cord together. Bundling these cords together will cause misoperation.
The total length of the transmission cord should not exceed 500 meters. Note that the total length of the transmission cord can be extended to 2,000 meters if the optional signal amplifier is used.
The power source capacity must be the sum of the air conditioner current and the current of other electrical appliances.When the current contracted capacity is insufficient,change the contracted capacity.
When the voltage is low and the air conditioner is difficult to start, contact the power company to raise electrical voltage.

⚠ WARNING
[1 phase TYPE] **The rated voltage of this product is 220-240V A.C.50 Hz.** **Before turning on verify that the voltage is within the 198 V to 264 V range.** **[3 phase TYPE]** **The rated voltage of this product is 380-415 V 3ϕ 50 Hz.** **Before turning on verify that the voltage is within the 342 V to 457 V range.**
Always use a special branch circuit and install a special receptacle to supply power to the air conditioner.
Use a circuit breaker and receptacle matched to the capacity of the air conditioner.
Perform wiring work in accordance with standards so that the air conditioner can be operated safely and positively.
Install a leakage circuit breaker in accordance with the related laws and regulations and electric company standards.

5-7. DRAIN CONNECTION

5-7-1. OUTDOOR UNIT

Please connect the hose when the processing of the drain water of the installation in the room etc. is necessary by the following method.



* Remove the rear panel.

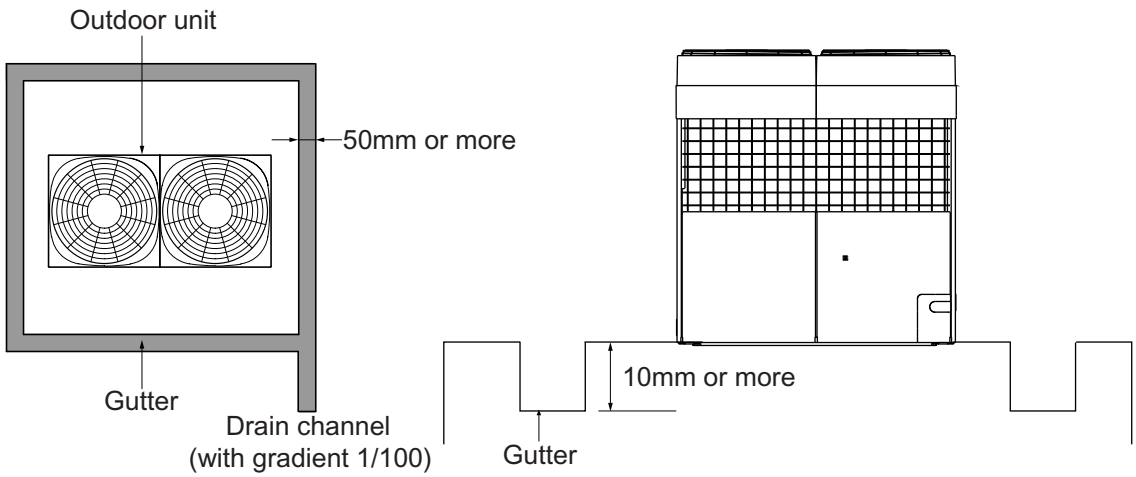
* Since the drain water flows out of the outdoor unit during heating operation, install the drain pipe and connect it to an commercial 16 mm hose.
  (When heating the outdoor temperature is 0°C or less, construct so that drain water from the outdoorunit will not freeze in the drain pipe.)

* Always use a drain pipe at three places.

INSTALLATION

⚠ CAUTION

Drain water will leak from the bottom of outdoor unit during cooling / heating operation,even if the drain pipe is connected.To prevent the area surrounding the outdoor unit from getting wet,install a gutter surrounding the outdoor unit as shown in the figure below for drain water.

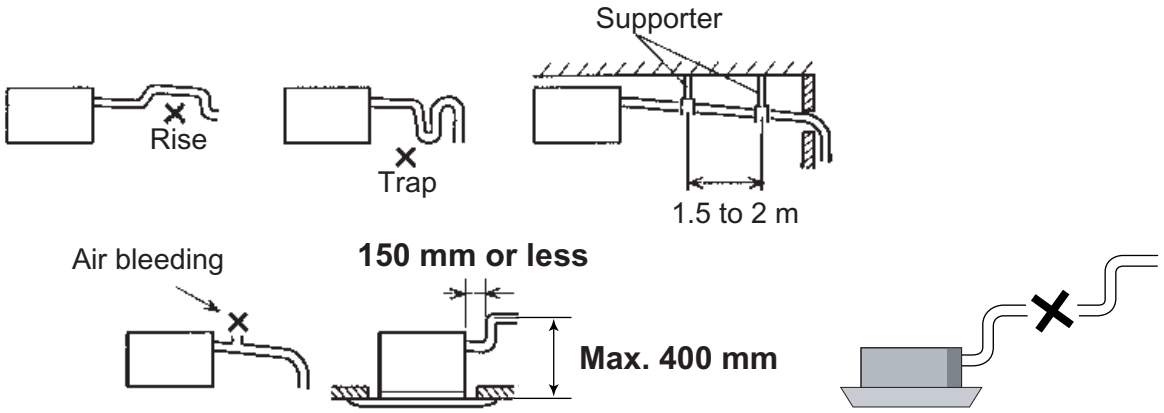


5-7-2. INDOOR UNIT

General Rules of drain process

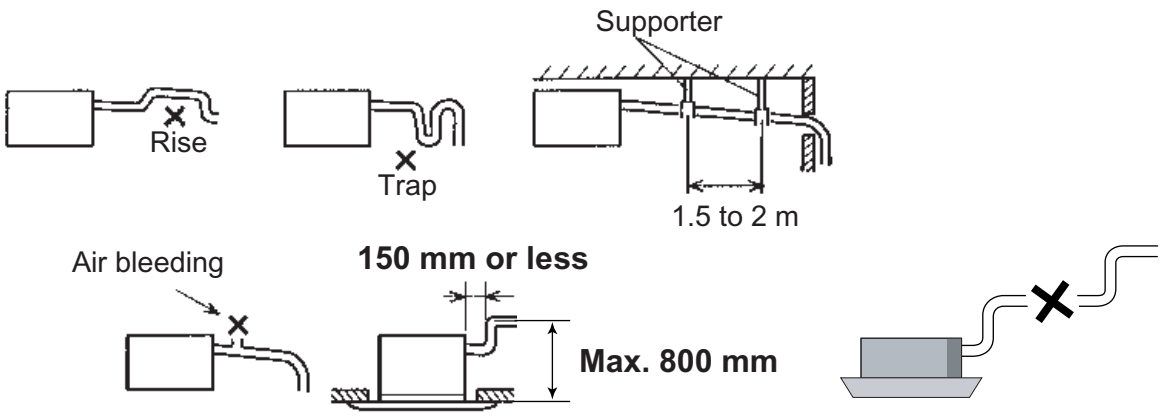
- ✳ Install the drain pipe with downward gradient (1/100 or more) and so there are no rises in the pipe.
- ✳ Use general hard polyvinyl chloride pipe (VP25) and connect it with adhesive (polyvinyl chloride) so that there is no leakage.
- ✳ Support the drain pipe with supporters each 1.5 to 2m.
- ✳ Do not perfrom air bleeding.
- ✳ Always heat insulate the indoor side of the drain pipe.

■ COMPACT CASSETTE TYPE



- ✳ When desiring a high drain pipe height, raise it up to 400 mm or less from the ceiling within a range of 150 mm from the body.
- ✳ A rise dimension over this range will cause leakage.

■ CASSETTE TYPE



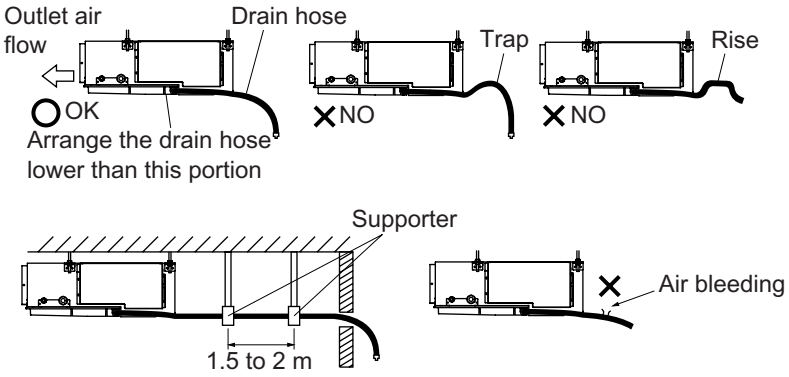
- ✳ When desiring a high drain pipe height, raise it up to 800 mm or less from the ceiling within a range of 150 mm from the body.
- ✳ A rise dimension over this range will cause leakage.

INSTALLATION

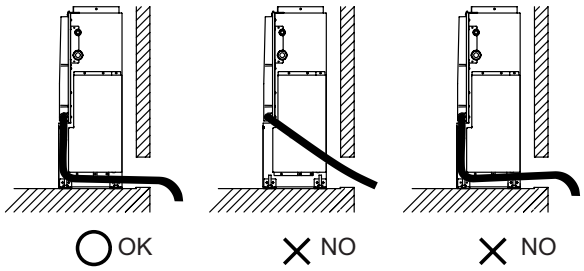
■COMPACT DUCT TYPE

Drain port : O.D ⌀26mm

A. CEILING CONCEALED SETTING



B. FLOOR STANDING CONCEALED SETTING



⚠ CAUTION

Connect the drain hose so that the control box cover can easily be removed for servicing when necessary.

In order to prevent water from leaking into the control box, make sure that the piping is well insulated.

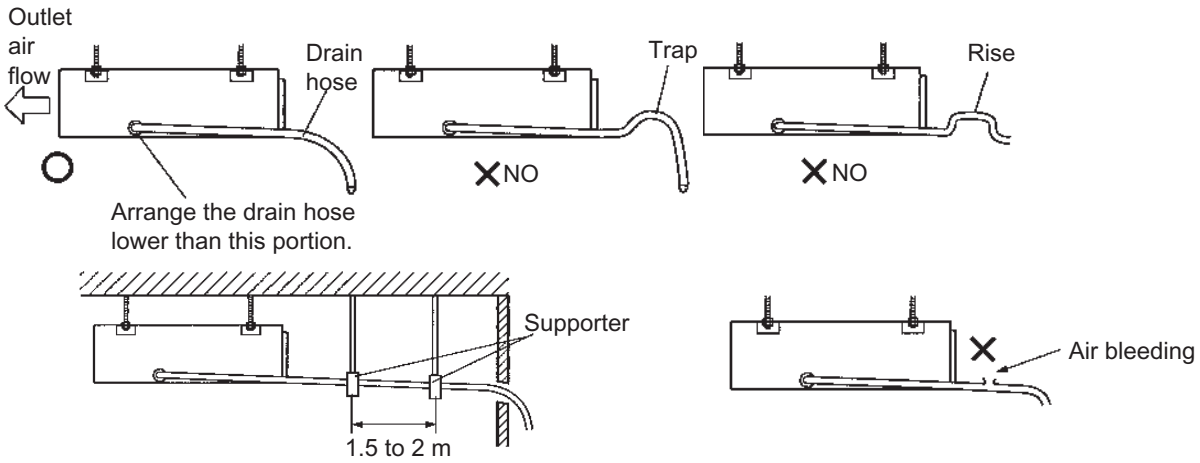
After finishing the piping, the drain hose installation and the wiring, seal the holes in the wall.

INSTALLATION

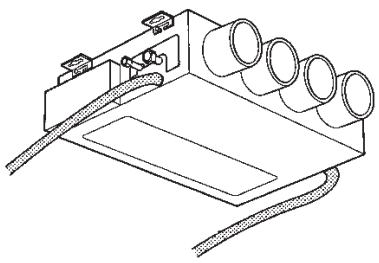
INSTALLATION

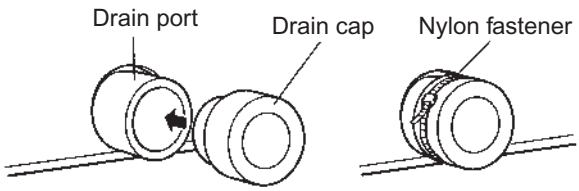
■LOW STATIC PRESSURE DUCT TYPE / DUCT TYPE

Drain port : O.D ⌀38mm



- ✳ The outside diameter of the drain port is 38 mm. Use a suitable drain hose.
- ✳ There is a drain port on both the left and right sides. Select the drain port to match the local conditions





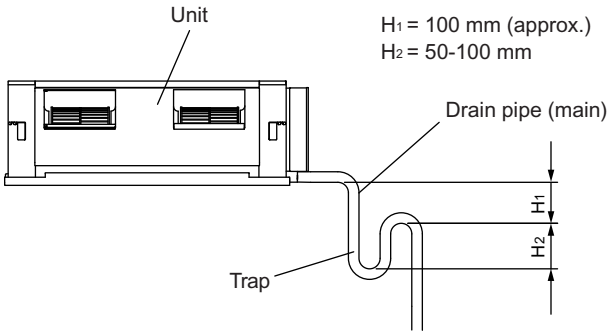
⚠ CAUTION

Always check that the drain cap is installed to the unused drain port and is fastened with the nylon fastener. If the drain cap is not installed, or is not sufficiently fastened by the nylon fastener, water may drip during the cooling operation.

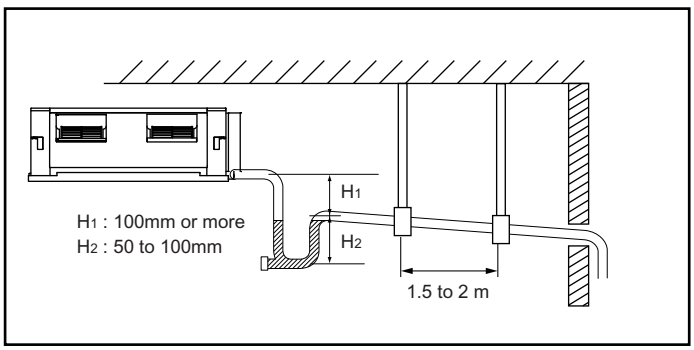
■HIGH STATIC PRESSURE DUCT TYPE

Drain port : O.D ⌀38mm

● Main drain pipe



* Install the drain hose so that there is a trap.
* The position of the installed drain hose should have a downward gradient of (1/100 or more).
* Make sure that the drain hose is installed without rises.
* Make the trap near to the indoor unit.

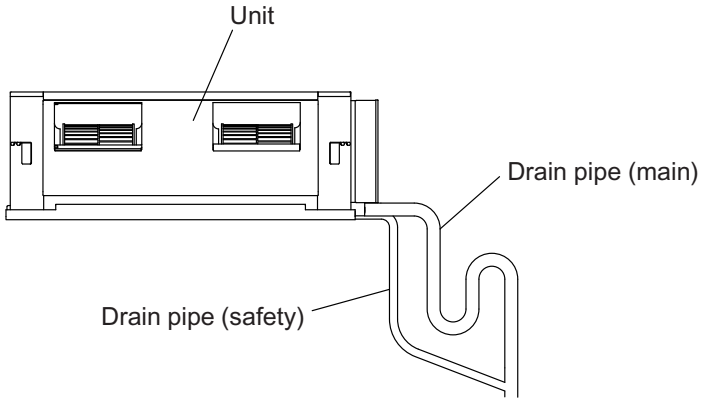


INSTALLATION

* Be sure to provide a drain trap for indoor units that have a large negative pressure in the area of the drain pan outlet.
* Provide one trap for each indoor unit. A trap will have no effect if positioned after the flows from multiple indoor units have joined together.
* Position the trap in a location where it can be cleaned.

● Safety drain pipe

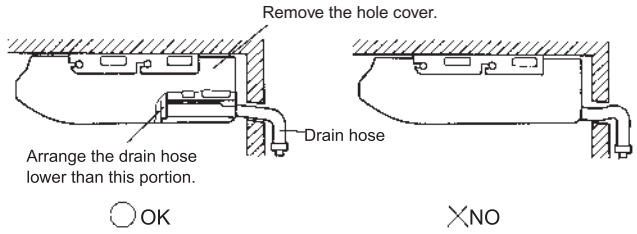
There is no need to provide a trap for the safety drain pipe. If the safety drain pipe is connected to the main drain pipe, make the connection below the trap on the main drain pipe.



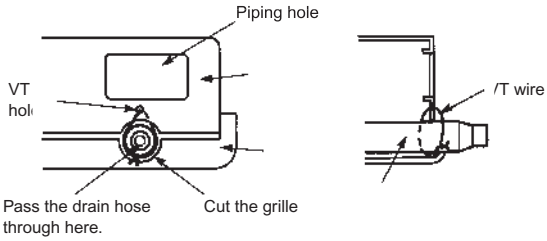
Once installation is complete, check the flow of the drain water.

■FLOOR / CEILING TYPE

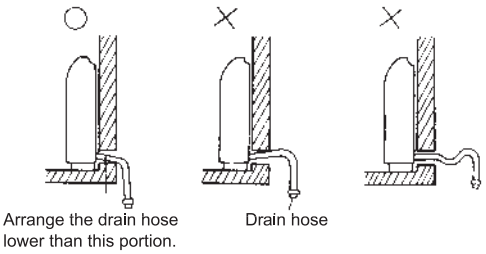
A.UNDER CEILING SETTING

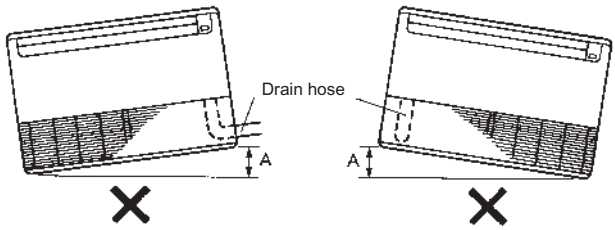


When drain hose is arranged backward.
Secure the drain hose with the VT wire (Fig. 20).



B.FLOOR CONSOLE SETTING



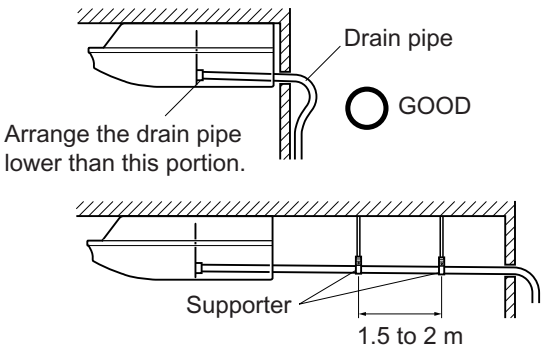


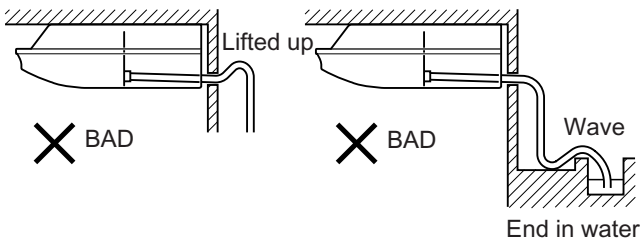
***Do not install the unit so that the drain hose side is too high.**
Height A should be less than 5mm.

INSTALLATION

■CEILING TYPE

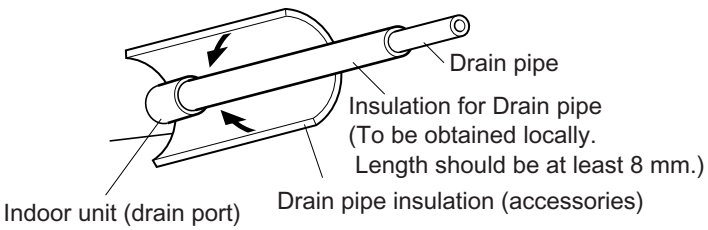
Drain port : O.D ⌀38mm

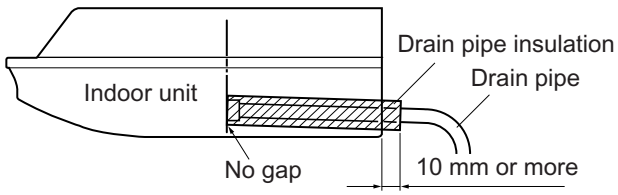




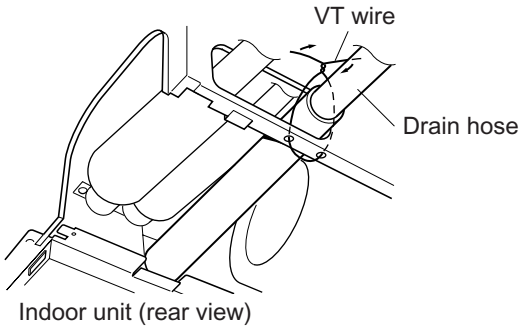
(1) Install insulation for the drain pipe.

Cut the included insulation material to an appropriate size and adhere it to the pipe.


Drain pipe
Insulation for Drain pipe
(To be obtained locally.
Length should be at least 8 mm.)
Indoor unit (drain port)
Drain pipe insulation (accessories)

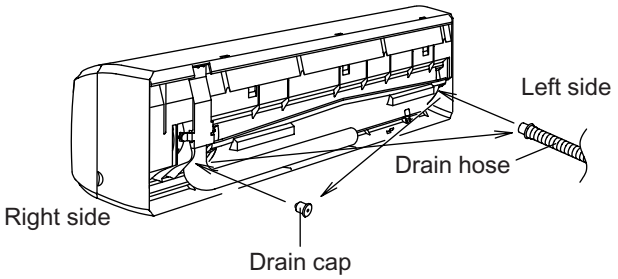


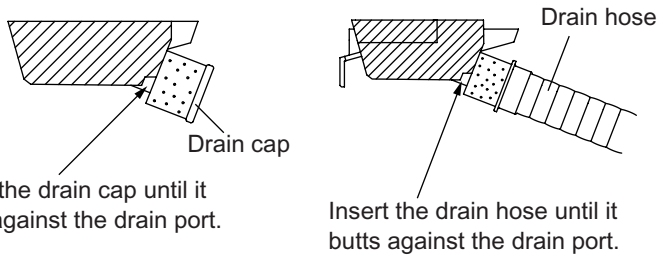
(2) If "1 Right rear piping" :fasten the drain pipe with VT wire so that the pipe slopes correctly within the indoor unit .



■WALL MOUNTED TYPE

Drain hose is attached.

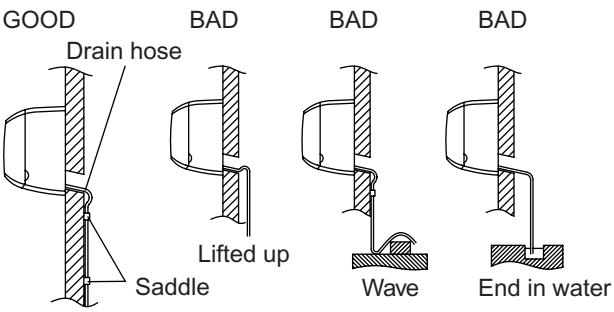




Insert the drain cap until it butts against the drain port.

Insert the drain hose until it butts against the drain port.

Check the following:

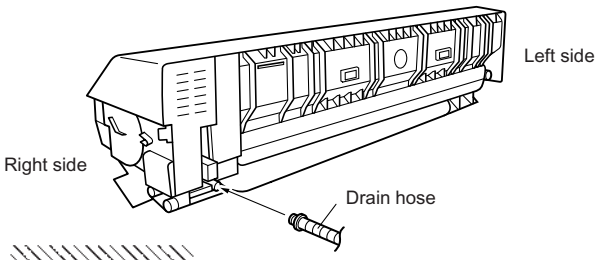


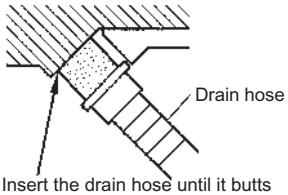
INSTALLATION

■ CEILING WALL TYPE

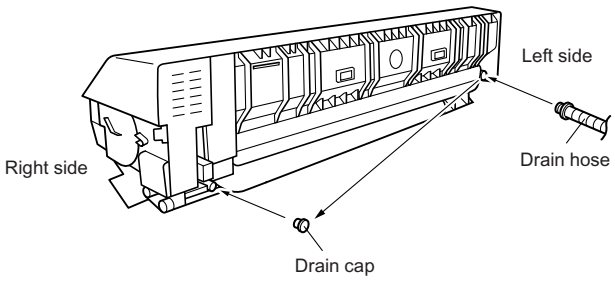
Drain hose is attached.

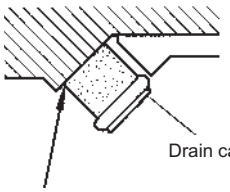
Mount the drain hose to the drain port on the right side.

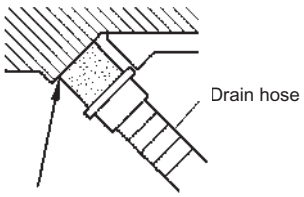




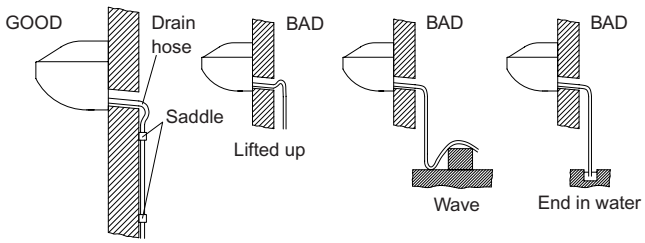
Remove the drain cap and mount to the drain port on the right side.
Mount the drain hose to the drain port on the left side.





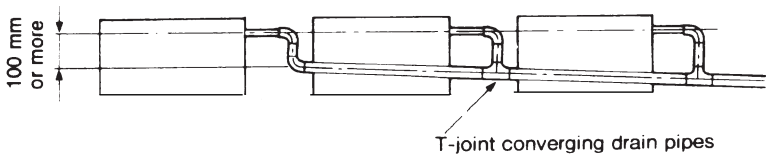


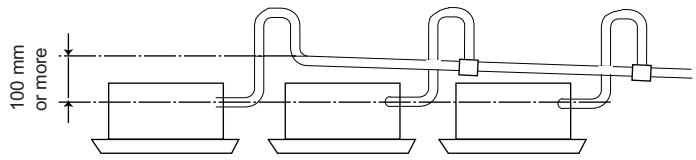
Check the following:



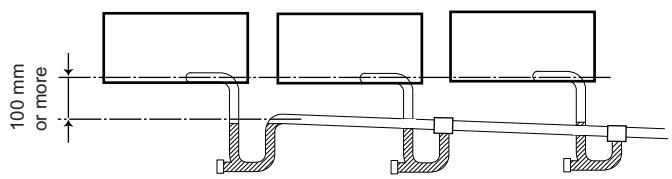
■ CENTRAL DRAIN PROCESS

When converging multiple drain pipes , install according to the procedure shown below.





For High static pressure duct type



Select converging drain pipes whose gauge is suitable for the operating capacity of the unit.

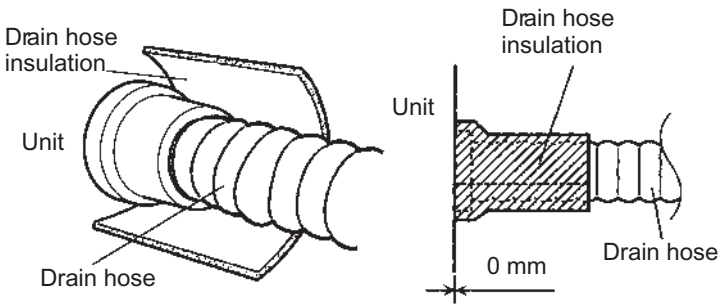
INSTALLATION

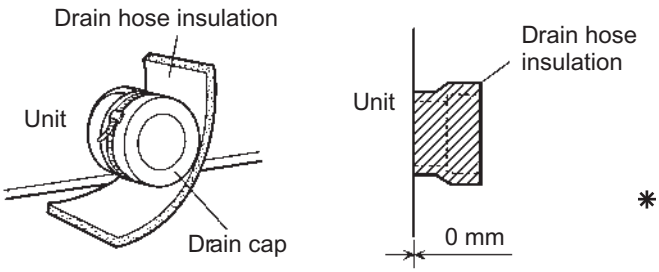
■ DRAIN INSULATION

✳ Please confirm water is injected into Drain pan of the indoor unit, and drain is done normally when the connection of Drain hose is completed.

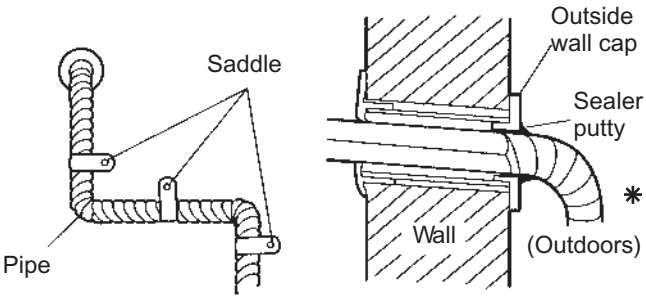
✳ Please check whether there is water leak part in the Drain piping.

✳ Please insulate it from heat by the heat insulator of enough thickness so that there is no be dewy when the confirmation ends. It causes the water leak like being imperfect.

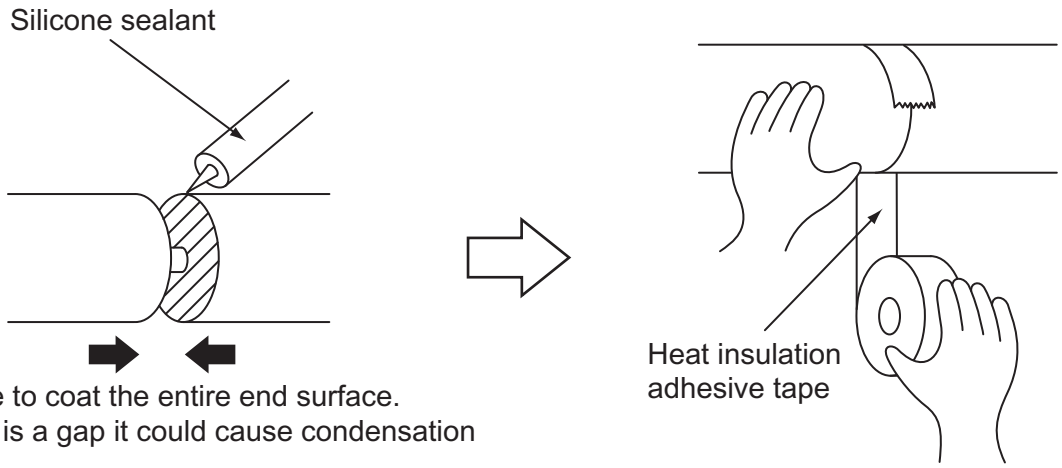




✳ Please roll the heat insulator also on the Drain cap side.(some models)



✳ Please cover the space with the putty etc. when you put out Drain hose from the wall.



✳ Be sure to coat the entire end surface.
If there is a gap it could cause condensation

INSTALLATION

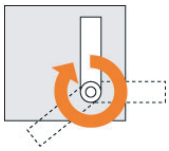
5-7-3. DRAIN PUMP UNIT

■ MODEL : UTZ-PX1BBA

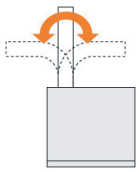
● Specifications

	Unit	Specifications
Height of drain up	mm	Maximum 1000
Power source	-	220 - 240V, 50 - 60Hz
Power input (230V, 50Hz/60Hz)	W	12 / 10.8
Current (230V, 50Hz/60Hz)	mA	114 / 92
Dimensions (H x W x D)	mm	176 x 178 x 154
Weight	kg	2.5
Connection pipe diameter	-	VP25 (I.D. 25mm, O.D. 32mm)
Direction of pipe connection *1	-	360°
Angle of pipe connection *2	-	0° (Horizontal) - 90°(Vertical)
Control method	-	Control board of Indoor unit
Safety device	-	Float switch, Thermal fuse

*1 Direction of pipe connection



*2 Angle of pipe connection



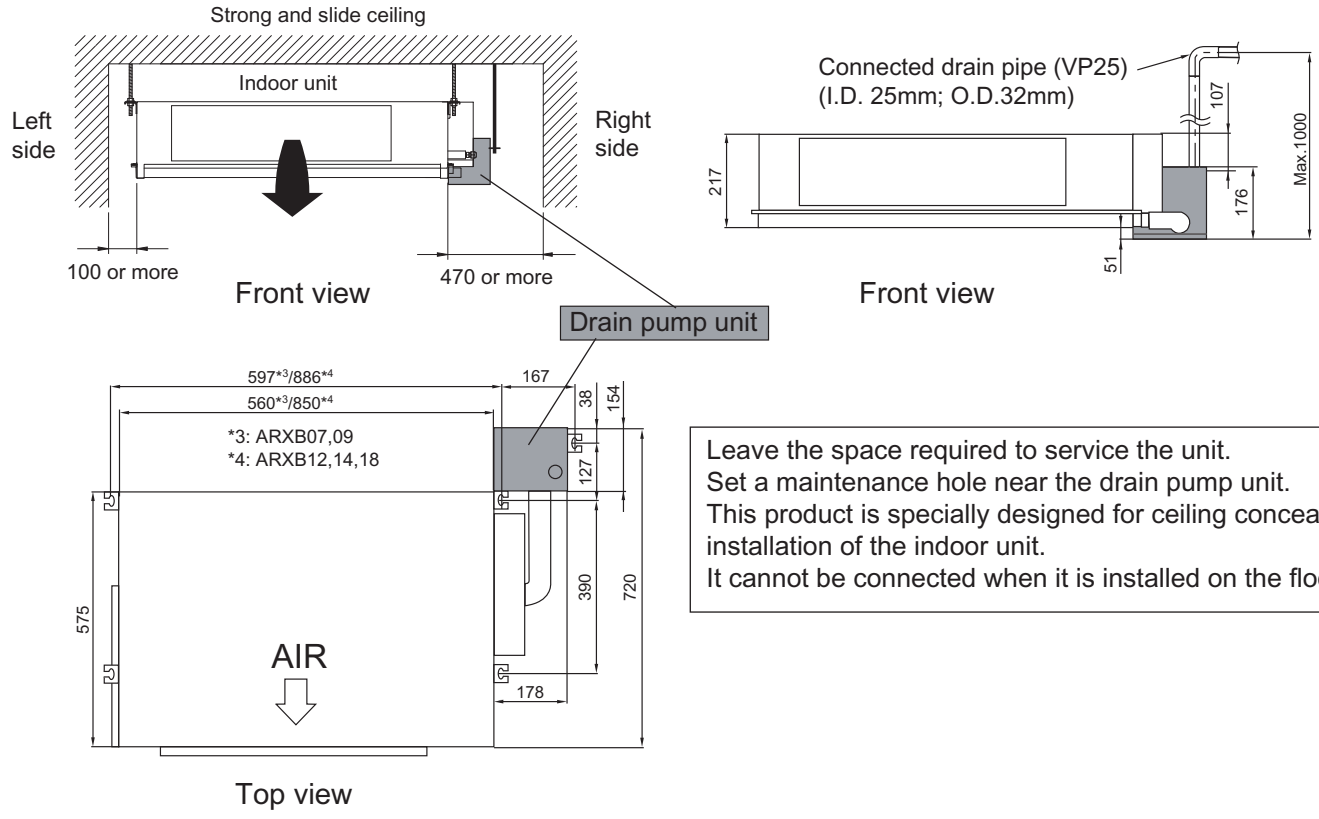
INSTALLATION

● Application indoor units

Type	Model
Compact Duct	ARXB07, ARXB09, ARXB12, ARXB14, ARXB18

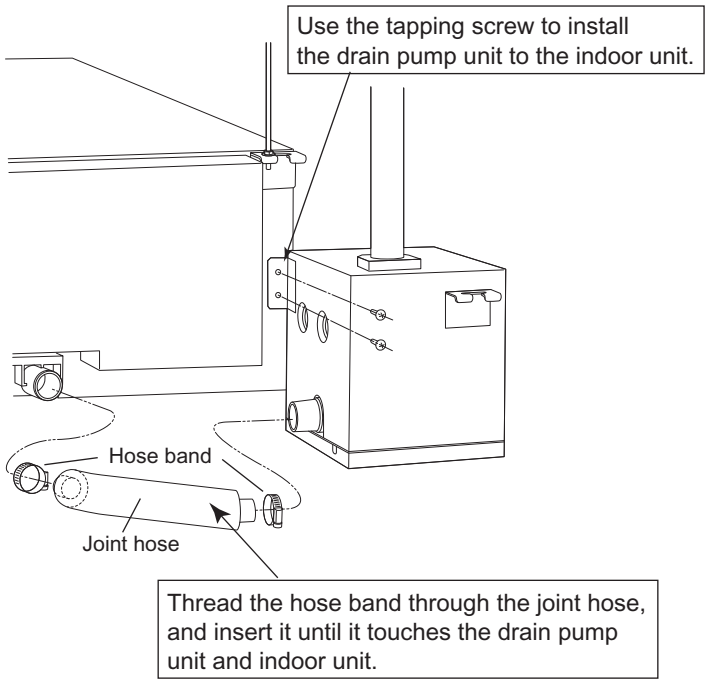
● Mounting position

(Unit : mm)



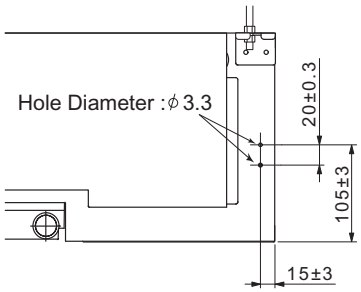
Leave the space required to service the unit.
Set a maintenance hole near the drain pump unit.
This product is specially designed for ceiling concealed installation of the indoor unit.
It cannot be connected when it is installed on the floor.

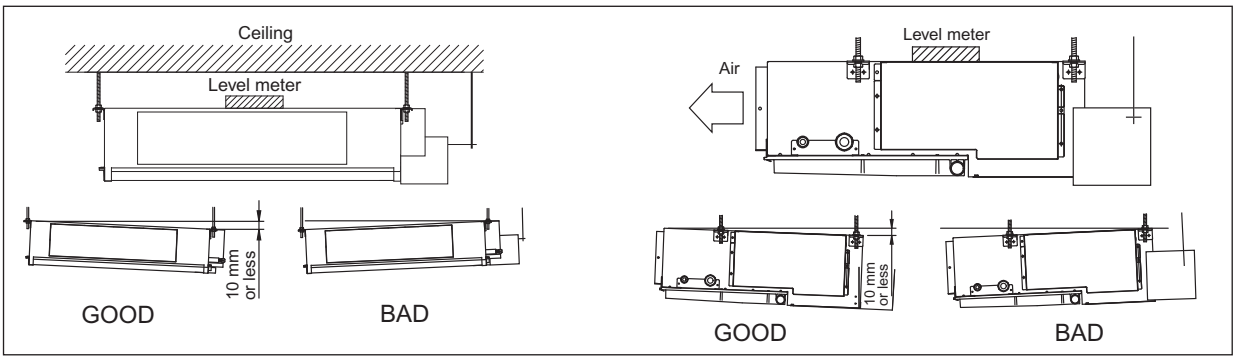
● Installing drain pump unit


Use the tapping screw to install the drain pump unit to the indoor unit.
Hose band
Joint hose
Thread the hose band through the joint hose, and insert it until it touches the drain pump unit and indoor unit.

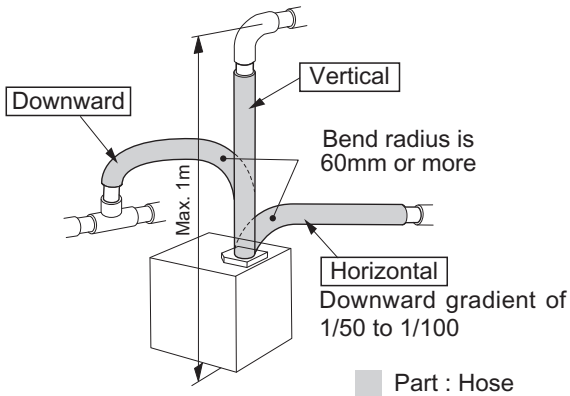
When there is no screw hole

Puncture holes at the following position and then install.

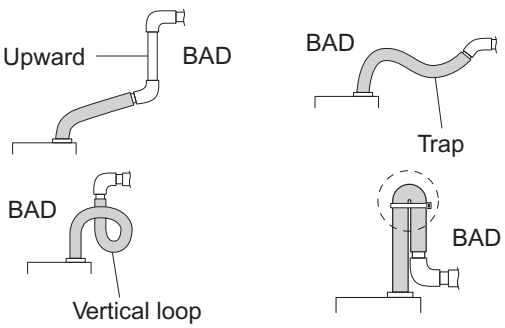




● Installing hose

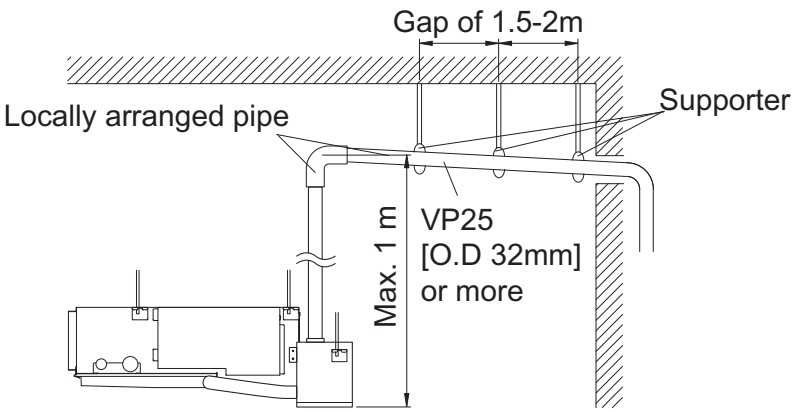


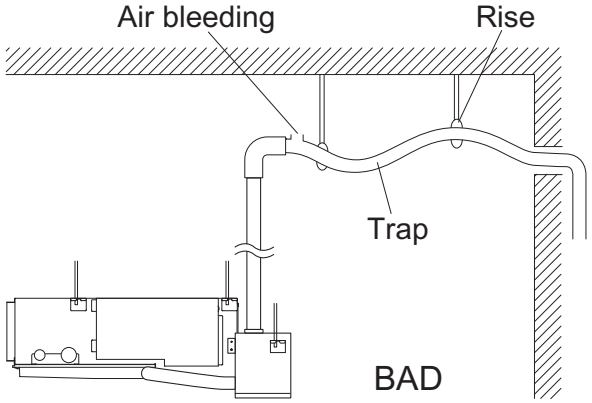
Example of wrong construction

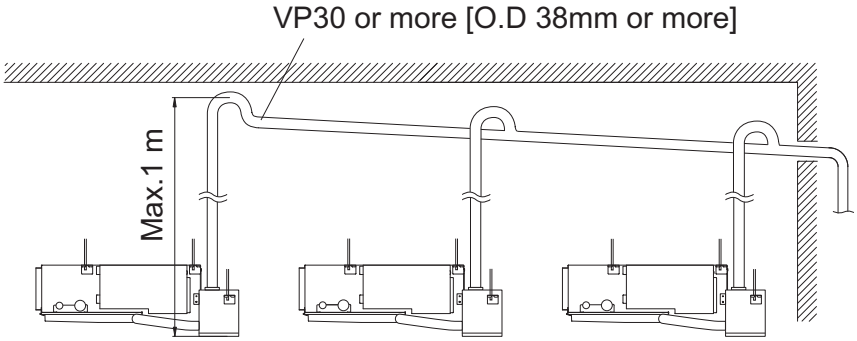


INSTALLATION

● Installing pipe



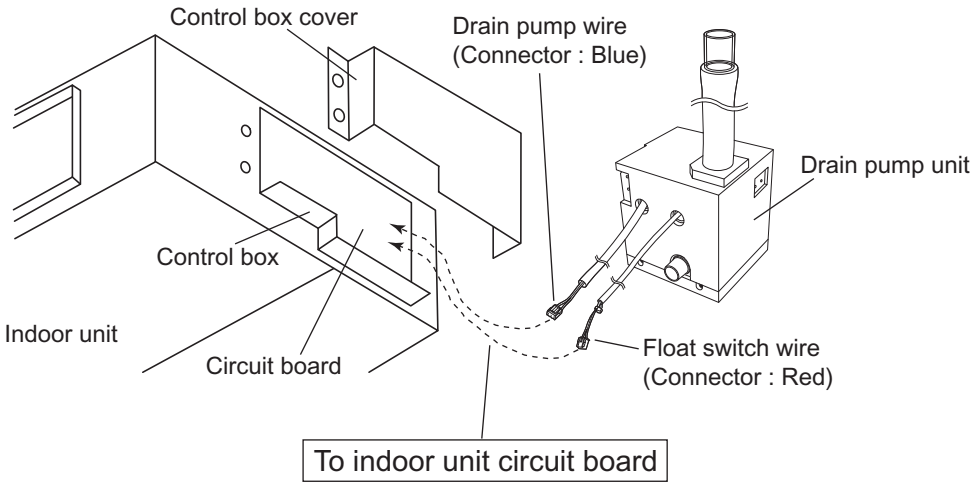




Observe the following procedures to construct centralized drain pipe fittings.

INSTALLATION

● Electrical wiring

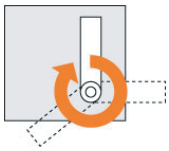


■ MODEL : UTZ-PX1NBA

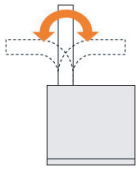
● Specifications

	Unit	Specifications
Height of drain up	mm	Maximum 1000
Power source	-	220 - 240V, 50 - 60Hz
Power input (230V, 50Hz/60Hz)	W	12 / 10.8
Current (230V, 50Hz/60Hz)	mA	114 / 92
Dimensions (H x W x D)	mm	176 x 178 x 154
Weight	kg	2.5
Connection pipe diameter	-	VP25 (I.D. 25mm, O.D. 32mm)
Direction of pipe connection *1	-	360°
Angle of pipe connection *2	-	0° (Horizontal) - 90°(Vertical)
Control method	-	Control board of Indoor unit
Safety device	-	Float switch, Thermal fuse

*1 Direction of pipe connection



*2 Angle of pipe connection



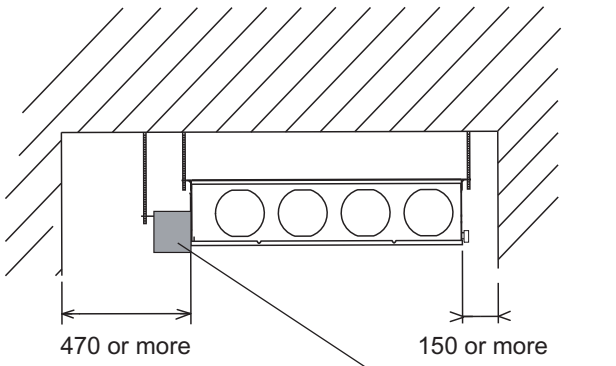
INSTALLATION

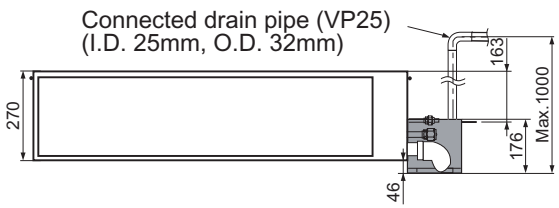
● Application indoor units

Type	Model
Low Static Pressure Duct	ARXB25, ARXB30, ARXB36, ARXB45
Duct	ARXA25, ARXA30, ARXA36, ARXA45

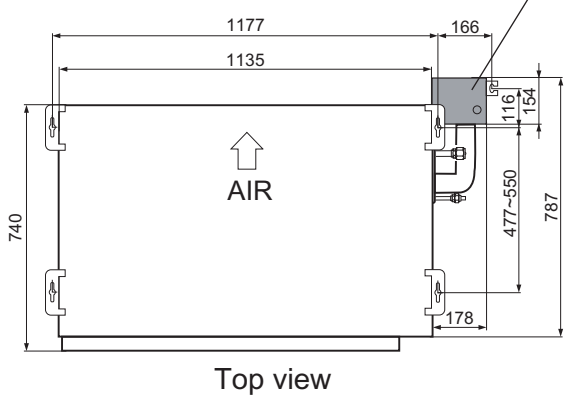
● Mounting position

(Unit : mm)





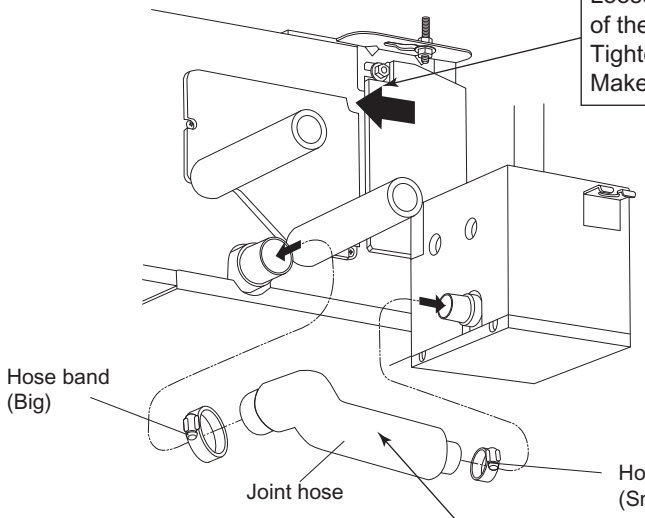
Back view

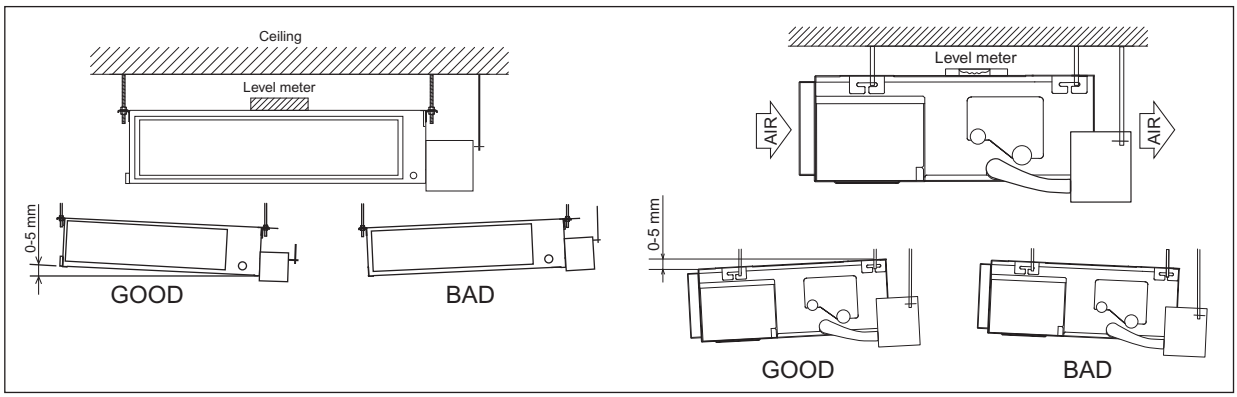


Top view

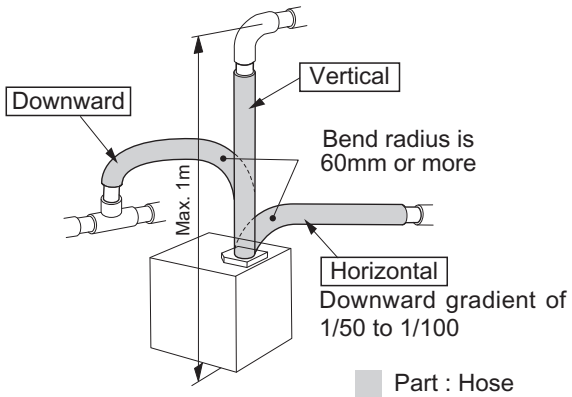
Leave the space required to service the unit.
Set a maintenance hole near the drain pump unit.

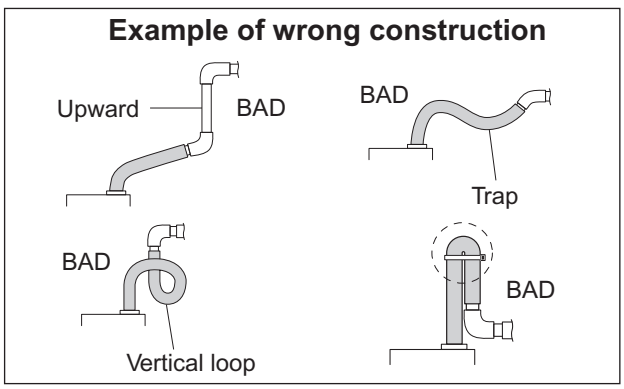
● Installing drain pump unit


Loosen the nut on the indoor unit and hook the tip of the bracket.
Tighten the nut securely.
Make sure that the drain pump unit is not slanted.
Hose band (Big)
Joint hose
Hose band (Small)
Thread the hose band through the joint hose and secure to the drain pump unit and indoor unit.

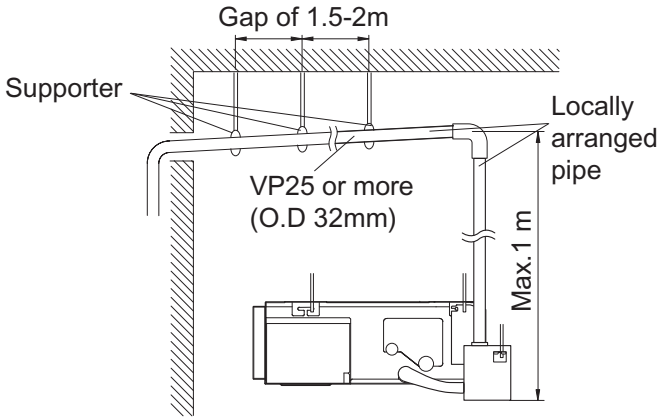


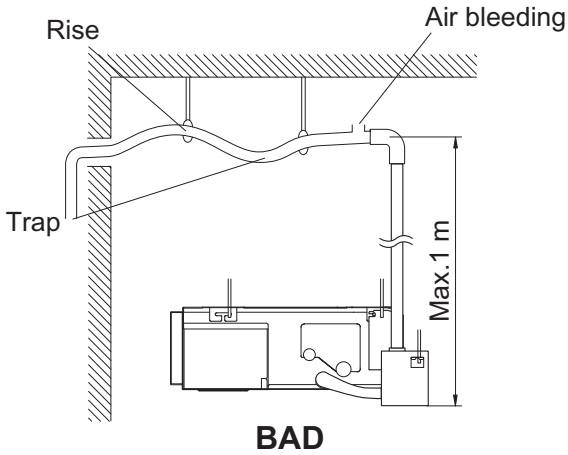
● Installing hose



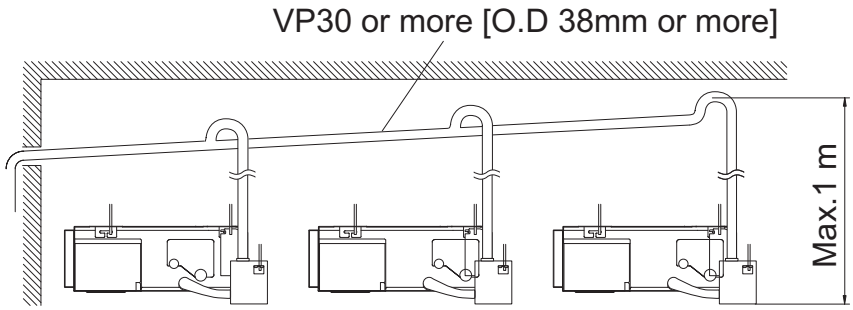


● Installing pipe





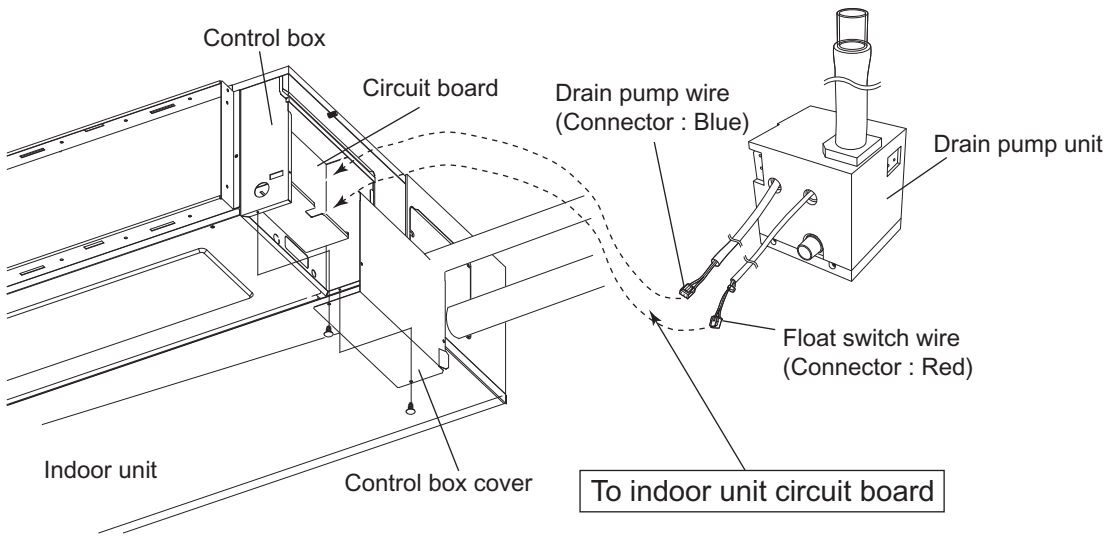
BAD



Observe the following procedures to construct centralized drain pipe fittings.

INSTALLATION

● Electrical wiring

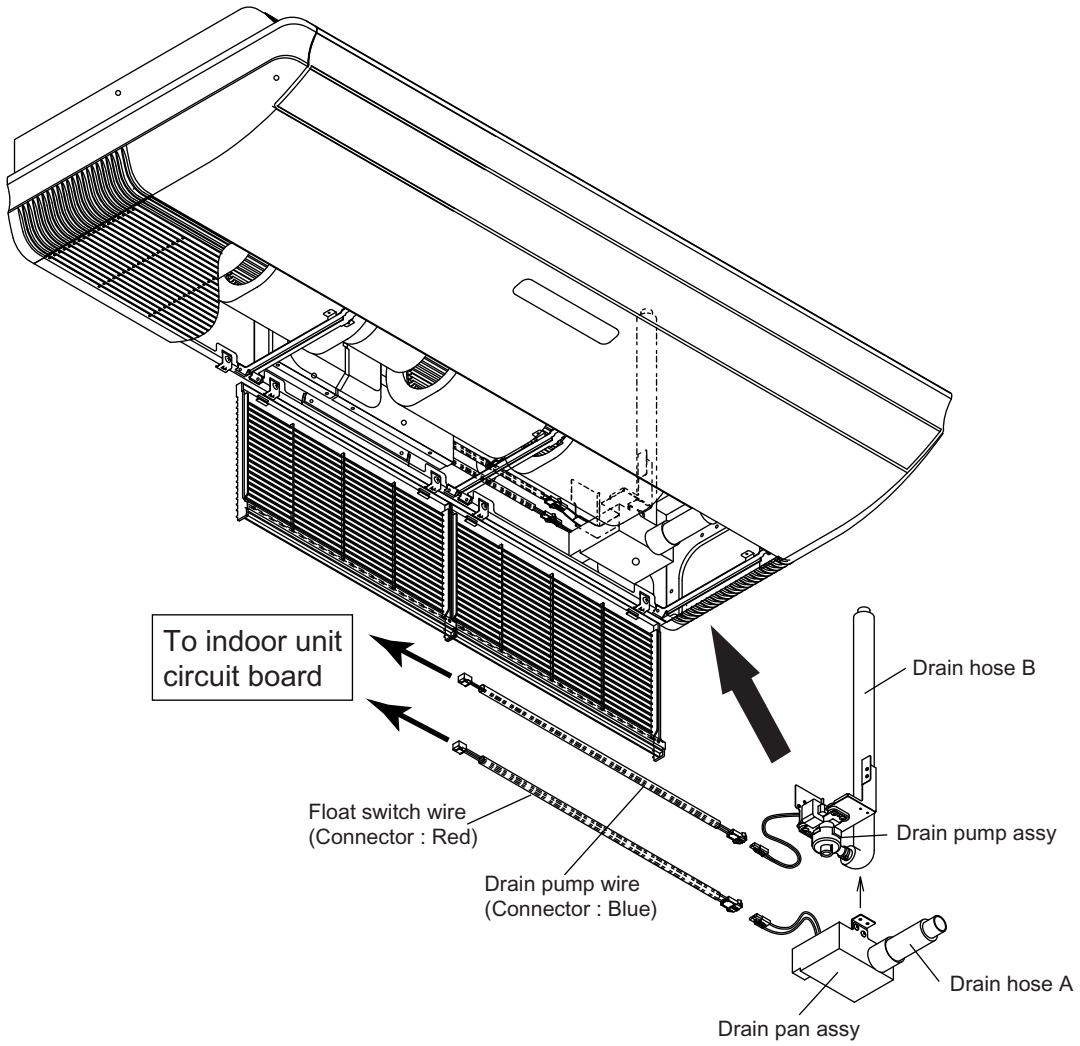


■ MODEL : UTR-DPB24T

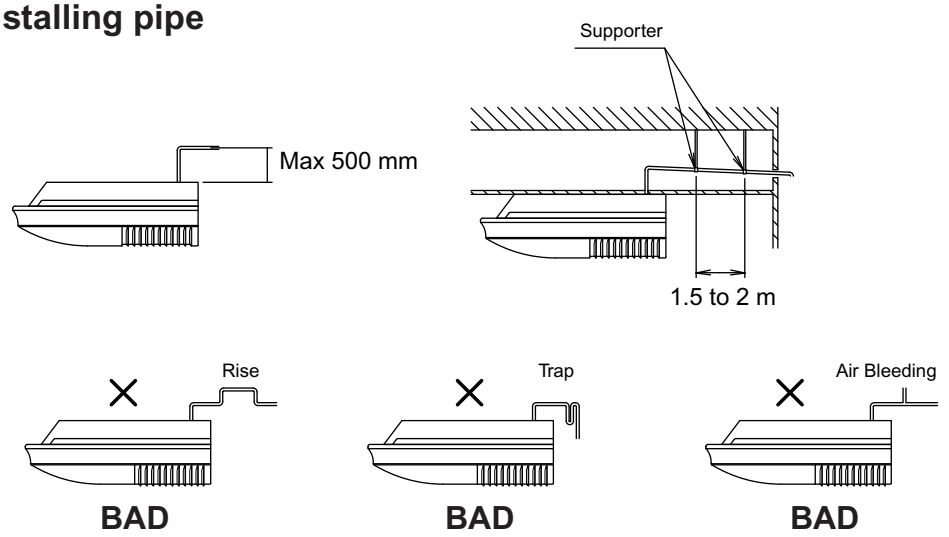
● Application indoor units

Type	Model
Ceiling	AB∗A30, AB∗A36, AB∗A45, AB∗A54

● Installing drain pump unit & Electrical wiring



● Installing pipe



5-8. TEST RUN

■ TEST RUN METHOD

The procedures for performing the test run are desribed below.
(Supply power for at least 12 hours before starting operation in the winter.)

(1) Perform a test run (cooling) separately for each indoor unit that is connected to the refrigerant system,and check the operation in order to confirm there is no problem on the wiring connection and the address.

(2)Perform a test run (cooling) simultaneously for all indoor units are connected to the refrigerant system,and check the operation in order to confirm all installation is completed.

• Test operation using circuit board (Outdoor unit)

If the test operation is to be done for cooling operation, set DIP switch (SW1-1) to on. If the test operation is to be done for heating, set DIP switch (SW1-2) to on.

• Test operation using remote controller

Refer to the installation instruction sheet for the indoor unit.

■ CHECK LIST

	Check item	Checking Method	Standard
1	After operating the indoor unit, the compressor operates?	Check operation sound and the LED of outdoor unit PCB.	Outdoor unit LED 3 :flushing
2	High pressure and low pressure are normal?	Confirm with a pressure gauge	Cooling : Low pressure 0.4 MPa (approx.) Heating : High pressure 2.0 MPa (approx.)
3	Intake and outlet air Temperature of indoor unit are normal?	Check that there is a difference between the intake and outlet air temperatures.	Cooling : Below -10˚C (approx.) Heating : Above 15˚C (approx.)
4	Water is drained from drain hose or by the drain pump smoothly? (Only for cooling mode)	Check operation sound of the drain pump.	—
		Confirm water is draining.	—
5	Expansion valve of the stopped indoor unit are normal?	Check the refrigerant flows to the heat exchanger.(Wait at least 5 minutes after the indoor unit has stopped before checking the refrigerant.)	Cooling : No refrigerant flow Heating : A little refrigerant flow

INSTALLATION

5-9. COMPATIBILITY OF VRF SYSTEM

■ COMPATIBILITY OF V series and S series

● OUTDOOR UNIT AND INDOOR UNIT

Compatibility of outdoor unit and indoor unit in refrigerant system as follows.

✱ "V series outdoor unit" and "S series indoor unit" are not allowed to connect.

			Indoor unit	
			V series	S series
Outdoor unit	V series	Heat Pump Cooling Only	○ OK	× NO GOOD
	S series	Heat Pump Cooling Only	○ OK	○ OK
		Heat Recovery	○ OK	○ OK

Applicable S series outdoor unit

HEAT PUMP, COOLING ONLY : MODEL CHANGE CODE "C"
HEAT RECOVERY : MODEL CHANGE CODE "B" or "C"

Applicable S series Indoor unit

MODEL CHANGE CODE "C" or later

● EXAMPLE CASES FOR COMPATIBILITY

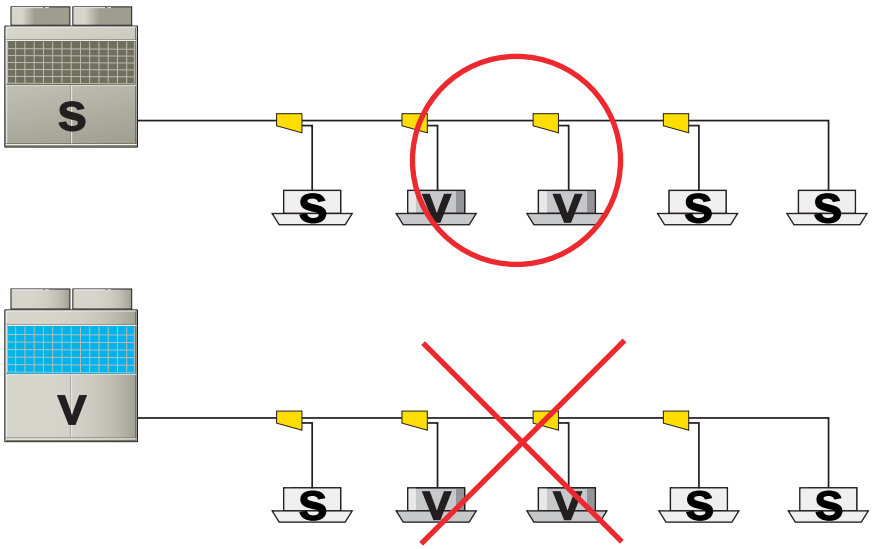
	OUTDOOR UNIT	INDOOR UNIT	
CASE 1	V series	V series	○ OK
CASE 2	V series	S series	× NO GOOD
CASE 3	S series	V series	○ ✱1 OK
CASE 4	S series	S series	○ OK

✱ Due to higher design pressure of V series(R410A) , S series indoor units has not permitted to connect V series outdoor unit.

✱1 • Following model of V series indoor unit can not be connected to S series outdoor unit.
ARXC90 High static pressure duct model.
• Following model of V series indoor unit can not be connected to S series Heat Recovery outdoor unit.
AS✱E07,09,12,14 Compact wall mounted model.

INSTALLATION

• For a same refrigerant system on S series,
V series and S series indoor units can be used together.

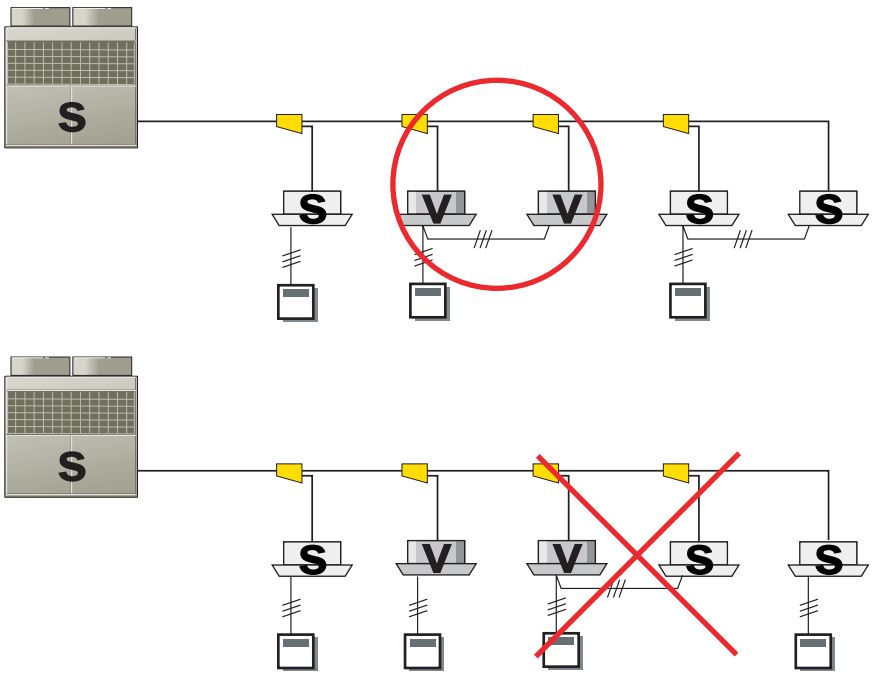


See on the previous page.
S series indoor unit can't be used with V series outdoor unit.

● INDOOR UNIT AND REMOTE CONTROLLER

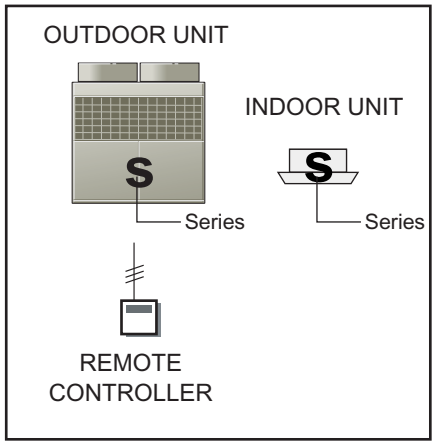
Compatibility of indoor unit and remote controller in remote controller group is follows.

• V series and S series indoor unit are not allowed to connect in same remote controller group.



✳ Built in remote sensor on wired RC doesn't work in S series indoor unit.

✳ Up to 16 indoor units can be connected to 1 remote controller.



■ COMPATIBILITY OF S Series

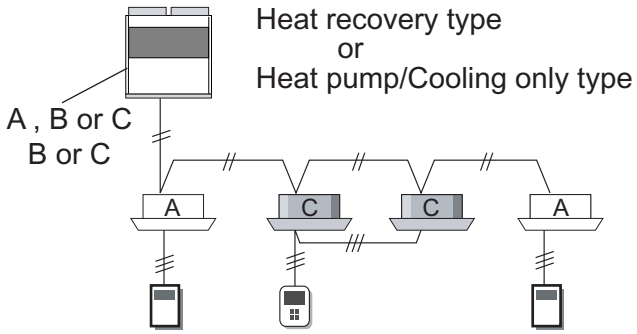
● OUTDOOR UNIT AND INDOOR UNIT

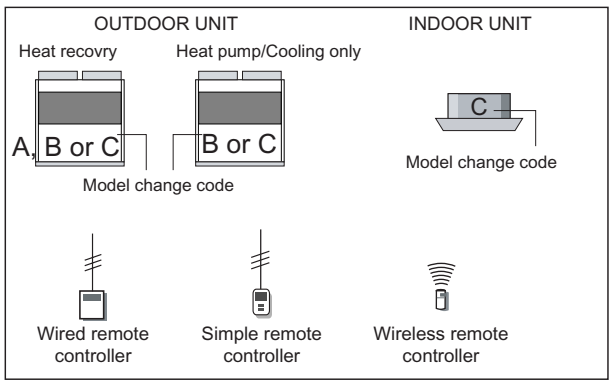
Compatibility table between Indoor unit and Outdoor unit

			Indoor unit		
			All model	Except for AS7 - 14	AS7 - 14
		Model change code	A or B (2000 ~ 2002)	C (2002 ~)	C (2002 ~ 2004) D (2005 ~)
Outdoor unit	Heat recovery type	A (2000 ~ 2005) B (2005 ~ 2008) C (2008 ~)	○	○	×
	Heat pump type Cooling only type	B (2000 ~) C (2005 ~)	○	○	○

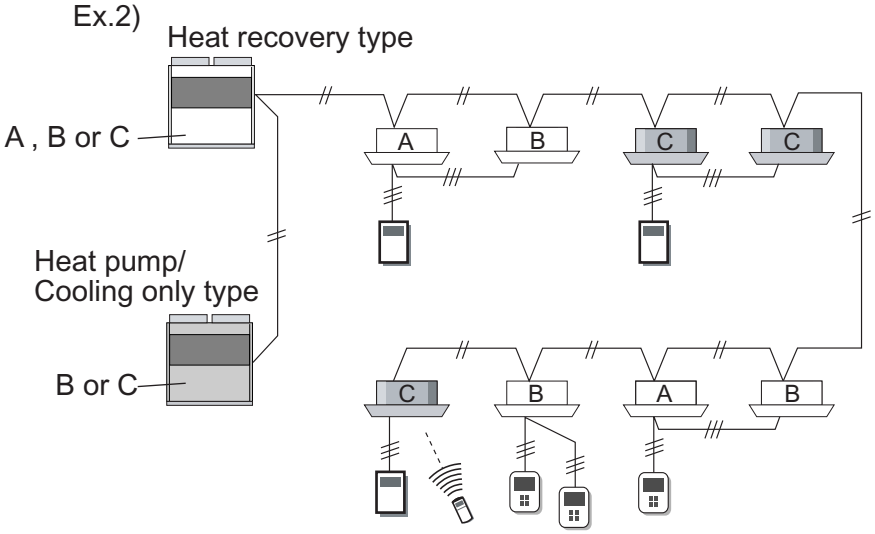
("A", "B", "C" ,"D" : MODEL CHANGE CODE)

Ex.1)





Ex.2)



Compact wall mounted type indoor unit (AS7 - 14) can't be operated by Heat recovery type outdoor unit.

In case of making remote controller group, refer to next page.

INSTALLATION

●Remote controller and remote controller group

Compatibility table

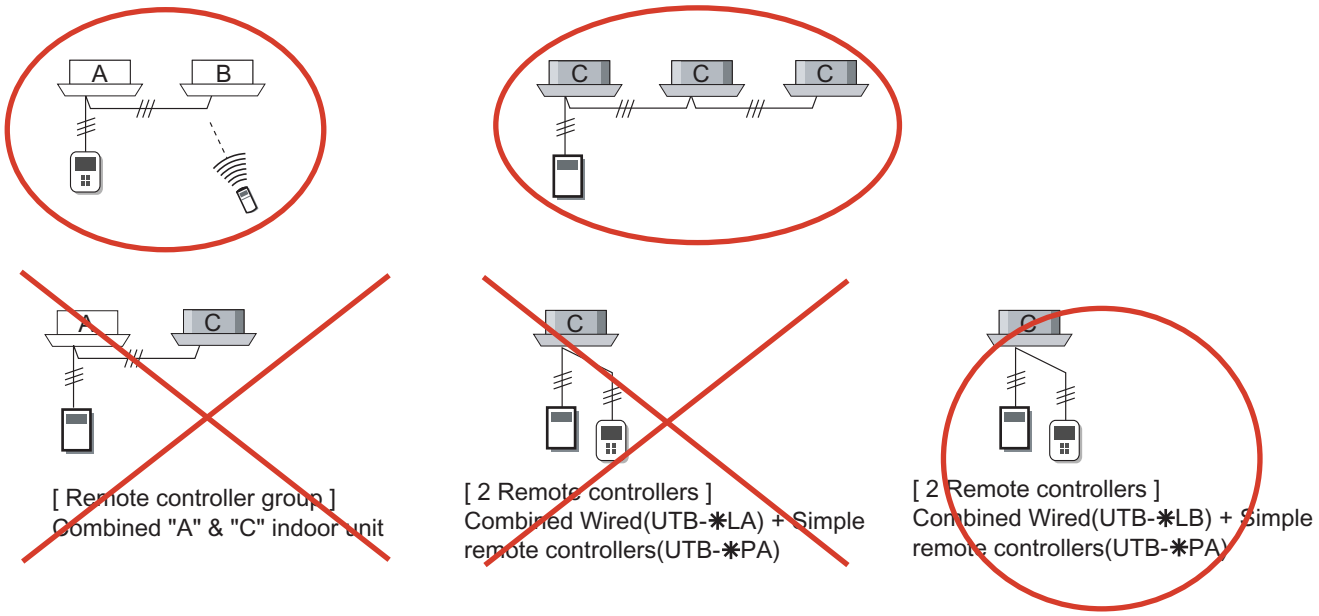
Combination of Indoor unit \ Combination of remote controller		1 Wired remote controller	1 Simple remote controller	1 Wireless remote controller	COMBINATION OF 2 REMOTE CONTROLLERS
Indoor unit	"A" "B"	○	○	○	See table below (Remote controller compatibility table)
	"C"	○	○	○	
Remote controller group (Combination of indoor unit)	"A" & "A" "A" & "B" "B" & "B"	○	○	○	
	"C" & "C" "C" & "D" "D" & "D"	○	○	○	
	"A" or "B" & "C" or "D"	×	×	×	×

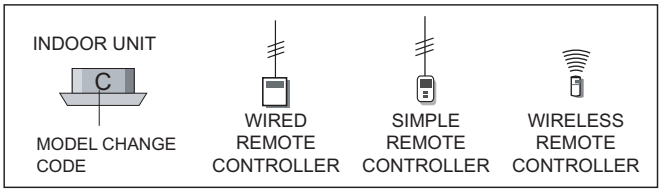
Remote controller compatibility table

		Wired			Wireless * 1)	Simple
		UTB-✳UB * 2) UTB-✳UA	UTB-✳LB	UTB-✳LA	UTB-✳VB UTB-✳VA UTB-✳SA	UTB-✳PA UTB-✳PB UTB-✳RA
Wired	UTB-✳UB * 2), UTB-✳UA	○	○	×	○	○
	UTB-✳LB	○	○	×	○	○
	UTB-✳LA	×	×	○	○	×
Wireless	UTB-✳VB, UTB-✳VA, UTB-✳SA	○	○	○	○	○
Simple	UTB-✳PA, UTB-✳PB, UTB-✳RA	○	○	×	○	○

* 1) AS7 - AS14 are only available for wireless remote controller.
* 2) Build-in thermo sensor doesn't work in S series system.

Ex.)





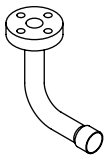
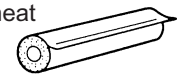
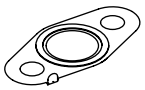
INSTALLATION

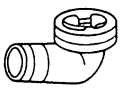
5-10. STANDARD ACCESSORIES

5-10-1. OUTDOOR UNIT

■ Heat recovery type

The following installation parts are supplied. Use them as required.

Description	Q'ty	Application
Flange joint assembly 	1	For connecting the piping
Coupler heat insulation 	2	For outdoor side pipe joint
Gasket 	1	Installation between flange joint assembly and valve B
Bolt	2	For fixing the flange joint assembly

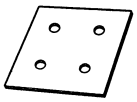
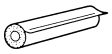
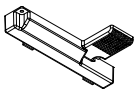
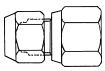
Description	Q'ty	Application
Drain pipe 	3	For outdoor unit drain piping work (Reverse cycle model only)
Auxiliary pipe assembly	1	For connecting the piping
Hexagon wrench	1	For opening the refrigerant valve on the outdoor unit

INSTALLATION

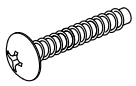
5-10-2. INDOOR UNIT

■ COMPACT CASSETTE TYPE

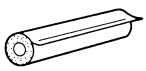
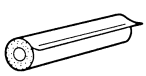
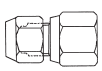
INDOOR UNIT ACCESSORIES

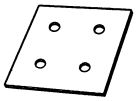
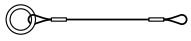
Name and Shape	Q'ty	Name and Shape	Q'ty	Name and Shape	Q'ty
Coupler heat insulation (Large)	1	Template 	1	Special nut A (Large flange)	4
Coupler heat insulation (Small) 	1	Binder	Small 2	Special nut B (Small flange)	4
Wire cover 	1		Large 4	Tapping screw (ϕ4 x 14)	2
Adapter  Use as needed ϕ12.7-ϕ9.52 (AU07/09) ϕ9.52-ϕ6.35 (AU18)	1				

GRILLE ACCESSORIES

Name and Shape	Q'ty	Name and Shape	Q'ty	Name and Shape	Q'ty
Bolt 	4	Washer	4	Blower cover insulation	2

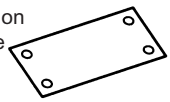
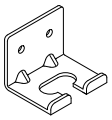
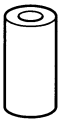
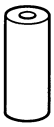
■ CASSETTE TYPE

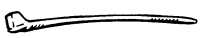
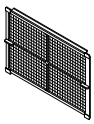
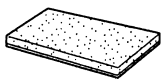
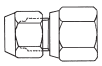
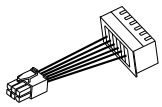
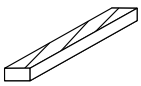
Name and Shape	Q'ty	Application
Binder (Laege)	4	For fixing the connection pipe (Large and Small)
Binder (Medium)	1	For power supply and transmission cord binding.
Binder (Small)	1	For remote control cord binding.
Coupler heat insulation (Small) 	1	For indoor side pipe joint (Small)
Coupler heat insulation (Large) 	1	For indoor side pipe joint (Large)
Adapter 	1	Use as needed ϕ9.52-ϕ6.35 (AU∗A20/25)

Name and Shape	Q'ty	Application
Special nut A (Large flange)	4	For suspending the indoor unit from ceiling.
Special nut B (Small flange)	4	
Template 	1	For suspending the indoor unit from ceiling.
Blower cover insulation	2	Use for static pressure more than 40 Pa.
Hook wire 	2	For installing intake grille.

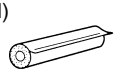
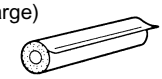
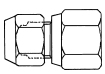
INSTALLATION

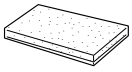
■COMPACT DUCT TYPE

Name and Shape	Q'ty	Application
Installation template 	1	For positioning the indoor unit
Hanger 	4	For suspending the indoor unit from ceiling
Tapping screw (ϕ4 x 10)	8	For installing the hanger
Special nut A M10 Large flange	4	For suspending the indoor unit from ceiling
Special nut B M10 Small flange	4	
Coupler heat insulation (large) 	1	For indoor side pipe joint (large pipe)
Coupler heat insulation (small) 	1	For indoor side pipe joint (small pipe)

Name and Shape	Q'ty	Application
Binder 	Small 2	For transmission and remote control cord binding.
	Medium 1	For power supply cord binding.
	Large 4	For fixing the coupler heat insulation.
Filter 	2 (AR7/9)	
	3 (AR12/ 14/18)	
Drain pipe insulation 	1	Insulates the drain hose and vinyl hose connection
Adapter 	1	Use as needed ϕ12.7- ϕ9.52 (AR7/9) ϕ9.52- ϕ6.35 (AR18)
Wire 	1	Use for static pressure more than 25 Pa.
Insulation (outlet) 	2 (Small)	For outlet flange
	2 (Large)	

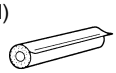
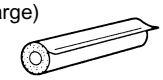
■DUCT TYPE

Name and Shape	Q'ty	Application
Binder (Large)	5	For fixing the connection pipe (Large and Small) and drain cap
Binder (Medium)	2	For power supply and transmission, remote control cord binding
Binder (Small)	2	For transmission and remote control cord binding
Coupler heat insulation (Small) 	1	For indoor side pipe joint (Small)
Coupler heat insulation (Large) 	1	For indoor side pipe joint (Large)
Adapter 	1	Use as needed ϕ9.52- ϕ6.35 (ARXA25L/ ARXB25L)

Name and Shape	Q'ty	Application
Special nut A (Large flange)	4	For suspending the indoor unit from ceiling
Special nut B (Small flange)	4	
Hanger	4	For suspending the indoor unit from ceiling
Drain hose insulation 	1	Insulates the drain hose and vinyl hose
Wire	1	Attached only ARXB25/ 30/36/45L model. Use for static pressure more than 40 Pa.

INSTALLATION

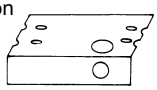
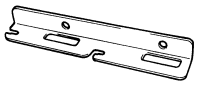
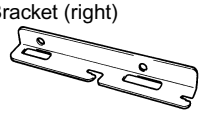
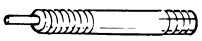
■ HIGH STATIC PRESSURE DUCT TYPE

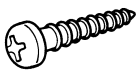
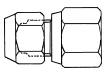
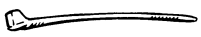
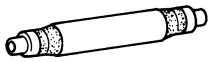
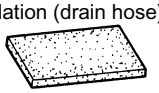
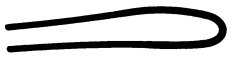
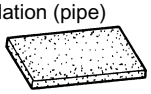
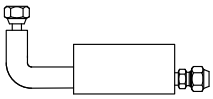
Name and Shape	Q'ty	Application
Binder (Large)	4	For fixing the connection pipe (Large and Small)
Binder (Medium)	1	For power supply cord binding
Binder (Small)	2	For transmission and remote control cord binding
Coupler heat insulation (Small) 	1	For indoor side pipe joint (Small)
Coupler heat insulation (Large) 	1	For indoor side pipe joint (Large)

Name and Shape	Q'ty	Application
Special nut A (Large flange)	4	For suspending the indoor unit from ceiling
Special nut B (Small flange)	4	

INSTALLATION

■ FLOOR / CEILING TYPE

Description	Q'ty	Application
Cover plate (left)	1	
Cover plate (right)	1	
Tapping screw (ϕ4 x 10)	2	
Installation template 	1	For positioning the indoor unit For under ceiling type
Bracket (left) 	1	For suspending the indoor unit from ceiling
Bracket (right) 	1	
Anchor bolt (M12) 	4	
Spring washer	4	
Special nut	4	
Wall bracket	2	For suspending the indoor unit on the wall

Description	Q'ty	Application
Tapping screw (ϕ4 x 20) 	6	For fixing the wall bracket
Coupler heat insulation	2	For indoor side pipe joint
Adapter 	1	AB 18/24 ONLY Use as needed ϕ9.52 -ϕ6.35
Binder 	Large 4	For fixing the coupler heat insulation
	Medium 1	For fixing the drain hose
	Small 2	For power supply, transmission and remote control cord binding
Drain hose 	1	
Insulation (drain hose) 	1	Adhesive type 70 x 230
VT wire 	1	For fixing the drain hose L 280 mm
Insulation (pipe) 	1	Adhesive type 160 x 110
Silencer pipe 	1	

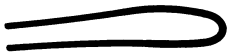
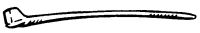
OPTIONAL PARTS FOR INDOOR UNIT

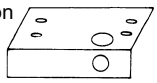
Description	Part No.	Application
Auxiliary pipe	9374714018	For indoor side pipe joint (18,000 and 24,000 BTU/h model)

INSTALLATION

INSTALLATION

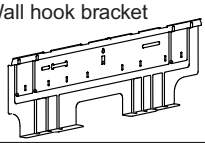
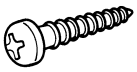
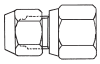
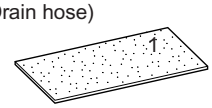
■ CEILING TYPE

Description	Q'ty	Application
Drain hose insulation	1	Adhesive type 70 x 230
VT wire 	1	For fixing the drain hose L 280 mm
Coupler heat insulation (large)	2	For indoor side pipe joint (large pipe)
Coupler heat insulation (small)	1	For indoor side pipe joint (small pipe)
Binder 	Extra large 4	For fixing the coupler heat insulation
	Large 4	
	Medium 1	For power supply cord binding
	Small 2	For transmission and remote control cord binding

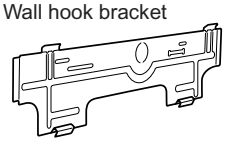
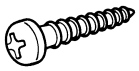
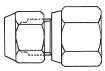
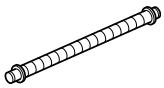
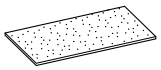
Description	Q'ty	Application
Special nut A (large flange)	4	For installing indoor unit
Special nut B (small flange)	4	For installing indoor unit
Installation template 	1	For positioning the indoor unit
Auxiliary pipe assembly	1	For connecting the piping

INSTALLATION

■WALL MOUNTED TYPE

Name and Shape	Q'ty	Name and Shape	Q'ty
Wall hook bracket 	1	Tapping screw (big) (ϕ4 x 20) 	12
Adapter  Use as needed ϕ9.52 -ϕ6.35 (AS18/24)	1	Insulation (Drain hose) 	1

■CEILING WALL TYPE

Name and Shape	Q'ty	Name and Shape	Q'ty	Name and Shape	Q'ty
Wall hook bracket 	1	Tapping screw (big) (ϕ4 × 20) 	12	Adapter  Use as needed ϕ12.7-ϕ9.52 (AW7/9) ϕ9.52-ϕ6.35 (AW18/24)	1
Drain hose 	1	Insulation (Drain hose) 	1		

INSTALLATION

5-11. REFRIGERANT LEAKAGE CAUTION

The installer and system specialist shall secure safety against leakage according to local regulations or standards. The following standards may be applicable if local regulations are not available.

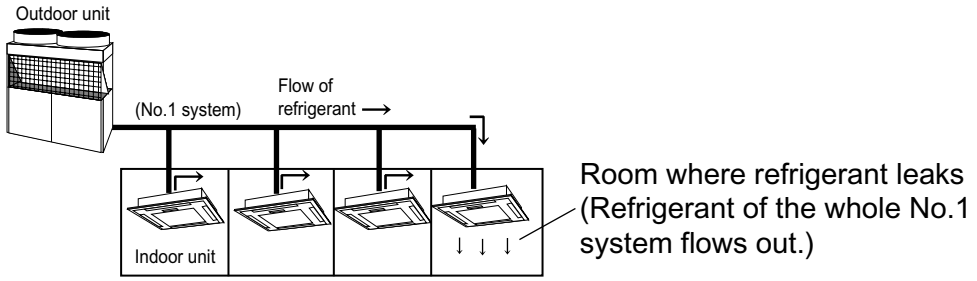
5-11-1. INTRODUCTION

Almost all our VRF type air conditioners use R22 or R407C as refrigerant. Though R22 and R407C are harmless and incombustible in themselves, the room in which the air conditioner is installed should be large enough that the refrigerant gas will not exceed the concentration limit even if the refrigerant gas leaks.

• Concentration limit

Concentration limit is the limit of Freon gas concentration where immediate measures can be taken without hurting the human body when refrigerant leaks in to the air. The concentration limit shall be described in units of Kg/m³ (Freon gas weight in /m³ air) to facilite calculation.

Concentration limit : 0.3kg/m³(R22),0.31kg/m³ (R407C) (ISO5149,prEN378-1)


Outdoor unit
(No.1 system)
Flow of refrigerant
Indoor unit
Room where refrigerant leaks (Refrigerant of the whole No.1 system flows out.)

INSTALLATION

5-11-2. CHECKING CONCENTRATION LIMIT

Check concentration limit following steps ① ~ ② , and take appropriate measures depending on the situation.

① Calculate amount of all replenished refrigerant (kg) per refrigerant system.

Amount of replenished refrigerant per refrigerant system + Amount of additional replenished refrigerant = Total amount of replenished refrigerant in refrigerant facility (kg)

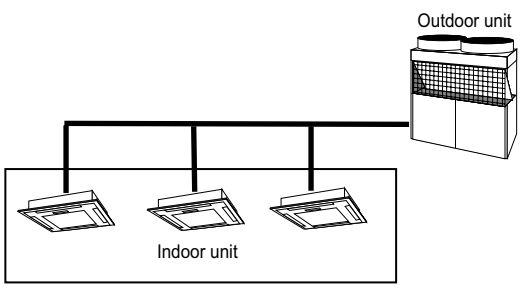
Amount of replenished refrigerant per refrigerant system
|
Amount of replenished refrigerant at factory shipment

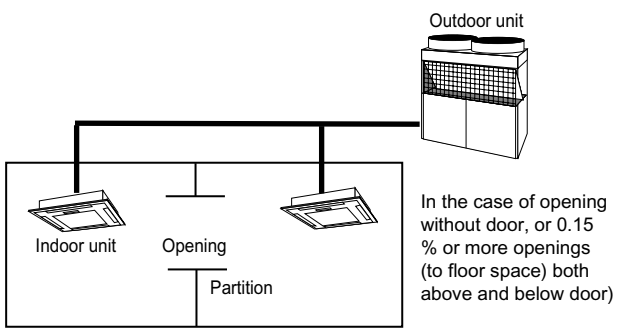
Amount of additional replenished refrigerant
|
Amount of additionally replenished refrigerant depending on piping length , piping diameter and indoorunit model at customer.

Note : When one refrigerant facility is divided into 2 or more refrigerant systems and each system is Independent, total amount of replenished refrigerant of each system shall be adopted.

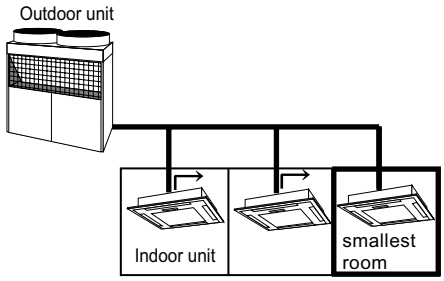
② Calculate minimum room capacity.
Calculate room capacity by regarding portion as one room or the smallest room.

(a) Without partition




Outdoor unit
Indoor unit
Opening
Partition
In the case of opening without door, or 0.15 % or more openings (to floor space) both above and below door)

(b) With partition and without opening which serve as passage of air to adjoining room.



③ Calculate refrigerant concentration from the results of ①and②

$$\frac{\text{Total amount of replenished refrigerant in refrigerant facility(kg)}}{\text{Capacity of smallest room where Indoor unit is installed(m}^3\text{)}} = \text{Refrigerant concentration(kg/m}^3\text{)}$$

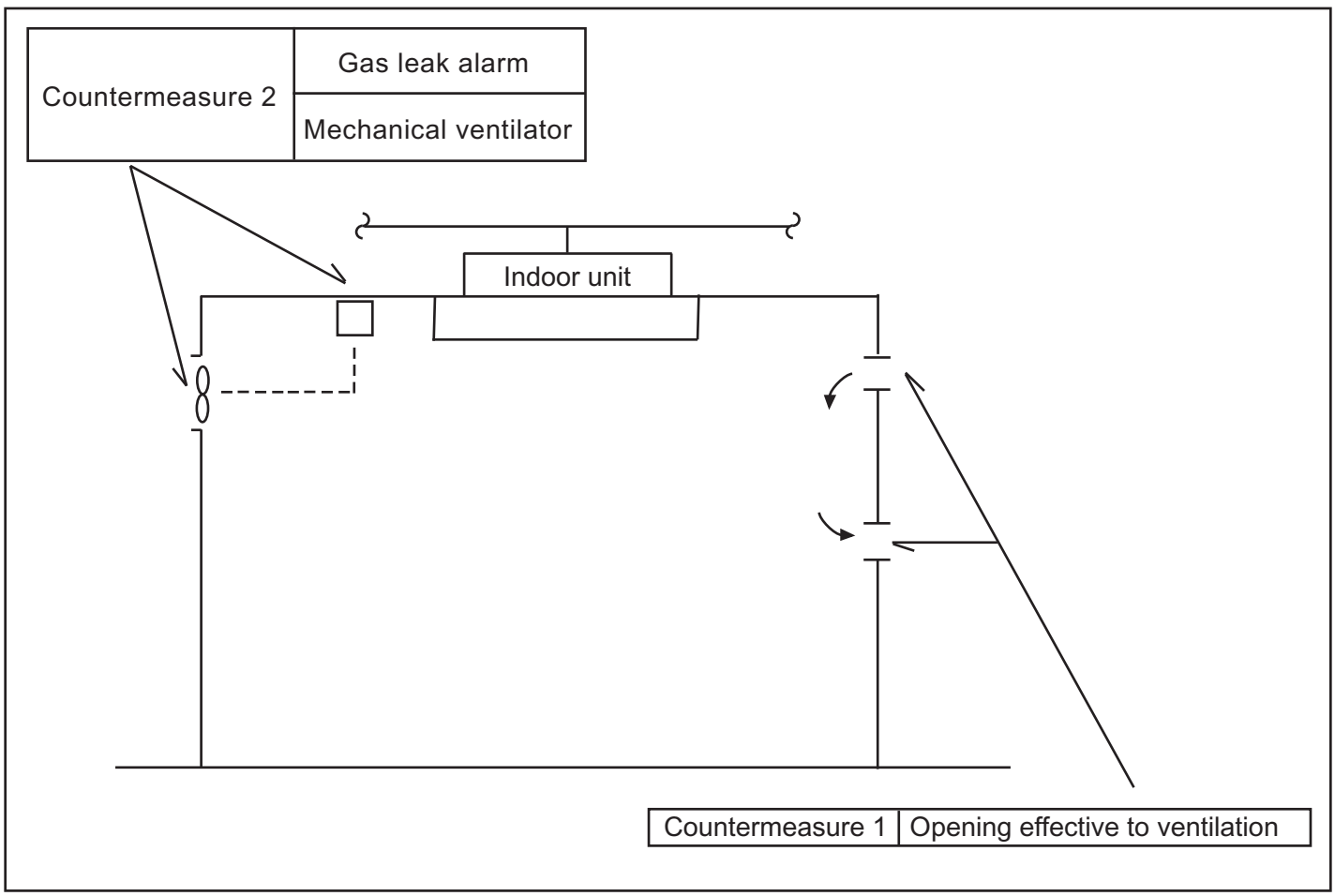
(R22 or R407C)

When the result of calculation exceeds the limiting concentration,perform the same calculations by shifting to the second smallest,and the third smallest rooms until the final result is below the limiting concentration.

When concentration limit is exceeded

When the concentration limit is exceeded,change the original plan or take one of the countermeasures shown below.

- Countermeasure 1
  Provide opening for ventilation.
  Provide 0.15% or more opening to floor space both above and below or provide opening without door.
- Countermeasure 2
  Provide gas leak alarm linked with mechanical ventilator.



Pay special attention to the place, such as a basement, etc. When refrigerant can accummalate, since refrigerant is heavier than air.

INSTALLATION